THE LAND OF THE FIVE RIVERS

(BEING VOL. I OF THE PUNJAB ADMINISTRATION REPORT, 1921-22, AND CONTAINING THE DECENNIAL PORTION OF THE REPORT.)

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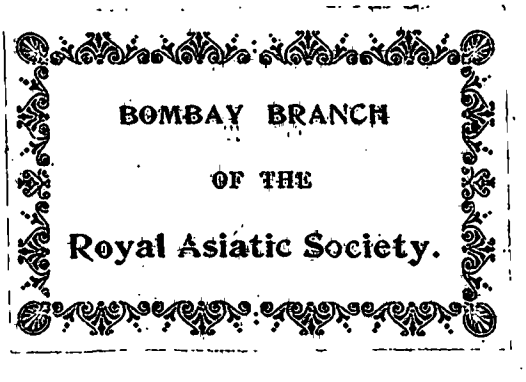

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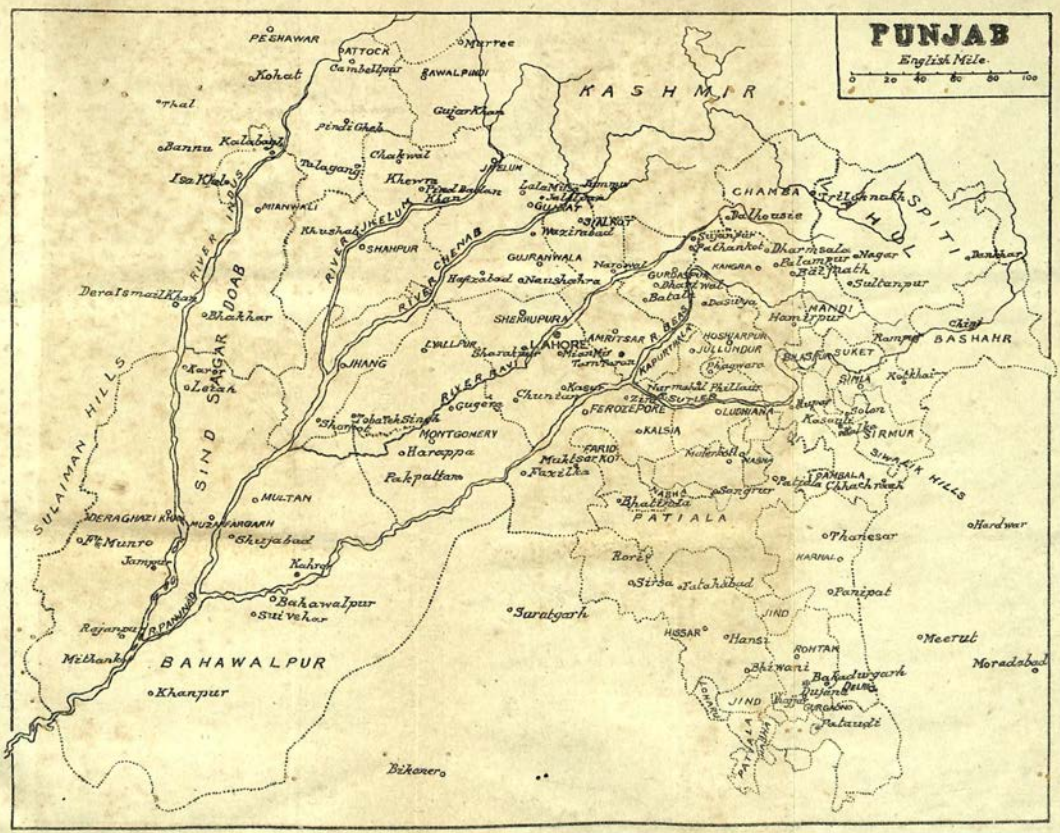
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Talagang
Isa Khel
Khewra
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CHAPTER I.

THE LAND OF THE FIVE RIVERS.

The Punjab.

1. The Punjab with the Indian States included in its boundaries and the Baloch trans-Frontier covers an area of about 137,000 square miles, or 86 million acres, which is considerably greater than that of the United Kingdom (77 million acres). Excluding the States within its borders the area is 60 million acres, or rather more than the area of Great Britain (56 million acres). The population in 1921 was 25 million (or excluding the States 20½ million). Together with the North-West Frontier Province and Kashmir, which lies to its north, it occupies the extreme north-western corner of the Indian Empire, and, with the exception of that province and of the recently constituted Delhi Province, comprises all of British India north of Sind and Rajputana and west of the river Jumna. Stretching northwards up to and beyond the great peaks of the Central Himalayas, and embracing the Tibetan valleys of Lahul and Spiti, it includes in its eastern districts a portion of Hindustan, and on its southern border it encroaches upon the great prairies of Rajputana, while its trans-Indus district of Dera Ghazi Khan contains a race whose history and traditions are connected with Baluchistan rather than with the Punjab. Indeed, the diversity which marks the physical and geographical aspects of the province is no less characteristic of the races which inhabit it, of their origin, language, beliefs, customs and social structure.

Historical and political importance of the Punjab.

2. Occupying the angle where the Himalayas which shut in the peninsula to the north meet the Sulaimans which bound it on the west, and lying between Hindustan and the passes by which alone access from the great Asian Continent is possible, the Punjab and the North-West Frontier Province guard the gateway of that Empire of which they were the last portion to be won. The great Aryan and Scythian swarms which in successive waves of migration left their arid plateaus for the fruitful plains of India, the conquering armies of Alexander, the peaceful Chinese pilgrims in search of the sacred scriptures of their faith, the Musalman invaders who came to found one of the greatest Muhammadan Empires the world has ever seen, the

devastating hordes led successively by Mahmud, Taimur, Nadir Shah, and Ahmad Shah, the armies of Babar and of Humayun,—all alike entered India across the wide plains of the five rivers from which the Province takes its name. The great central watershed which constitutes the eastern portion of the Punjab has ever been the battle-field of India. It was in prehistoric times the scene of that conflict which, described in the Mahabharat, forms the main incident of one of the oldest epics in existence ; while in later days it witnessed the struggles which first gave India to the Muhammadans, which in turn transferred the Empire of Hindustan from the Lodi to the Mughal dynasty and from the Mughals to the Mahrattas, which shook the power of the Mahrattas at Panipat, which finally crushed it at Delhi and made the British masters of Northern India, and which saved the Empire in the terrible outbreak of 1857.

Economic effects of the Punjab's geographical situation.

3. The Province is completely landlocked. Its rivers give no access to the sea, not being navigable for even medium-sized craft. It suffers from the further disadvantage of being bounded on three sides by countries that offer no markets for its products. The Province, in fact, represents a densely populated peninsula thrust north-westward into a very sparsely populated area. On the north lie the North-West Frontier Province, Kashmir, Ladakh and Tibet and beyond these again the deserts of Turkestan. On the west are Afghanistan and Baluchistan and beyond these Persia. On the south lie Bikaner and Rajputana, comparatively sparsely populated and undeveloped. In all these countries there is not the number of consumers required to make them valuable markets for Punjab produce. With them there will not, for many years, be any great volume of trade. On the east, the United Provinces present a rich market ; but the two areas are so similar in soil, climate and people, that they produce similar commodities, and so compete with each other for customers.

Economic isolation prior to British rule.

4. The geographical position of the Punjab has had, and must continue to have, very far-reaching consequences. Its corner position, amidst comparative deserts, deprives its people of the opportunity, so valuable to England, of acquiring wealth as the middlemen of a through trade across its frontiers. Prior to the advent of the railway, such trade as existed was almost confined to Afghanistan and Central

Asia, but it was never of great value or volume, and has shown little, if any, capacity for expansion. There was practically no trade of importance with Bombay and very little with Karachi. The rulers of the Province who preceded the British were not great road builders; stone metalling was practically unknown ; the great rivers were unbridged ; organised transport facilities did not exist. In time of plenty grain was so cheap as to be almost unsaleable, for there was no market for the surplus; in time of scarcity grain could not be imported from distant places and starvation resulted. Even now, the rivers impose serious obstacles to commerce where bridges do not exist. The Jumna from Delhi to Jagadhri can only be crossed by ferry, and no considerable traffic adopts this method. On the west, the Indus imposes a still more difficult barrier. For several months in a normal year, when the five internal rivers are in flood, there is very little trade across them except by rail or bridge.

Scenery and Geology.

5. The Province presents a great variety of scenery, from the snow peaks and glaciers of the Upper Himalayas to the deserts of shifting sand in the Sind-Sagar Doab and Bahawalpur. But the characteristic scenery of the Punjab is that of the plains, and the contrast between their luxuriant green appearance before the crops are cut, and the dull brown after, is most striking. The whole of these vast plains are of alluvial formation. Stones are unknown save at the immediate foot of the hills ; micaceous river sand is to be found everywhere at varying depths ; and the only mineral is *kankar* (*i.e.*, nodular accretious of limestone), and even *kankar* disappears in the west. The soil is a singularly uniform loam. True clay is almost unknown, and the quality is chiefly determined by the greater or smaller proportion of sand present. But where rocks crop out the geology is interesting. In the southern and south-eastern districts there are expanses of highly folded and metamorphosed rocks which belong to the most ancient formations in India. The Salt Range again contains notable records of three distinct eras in geological history. In association with the well-known beds of rock-salt which are being extensively mined at Khewra, occur the most ancient fossiliferous formations known in India, corresponding in age with the middle and lower part of the Cambrian system of Europe. A younger system of rocks, which were found in the latter part of the

Carboniferous period, contain a boulder bed, apparently of glacial origin, above which are to be found the coal-treasures of the Salt Range. The still younger Tertiary formations are interesting from the relics of gigantic extinct monsters which have been found therein. The Himalayas illustrate, in a succession of fossiliferous beds, the history of the great inland sea of the Tethys, which once covered the central parts of Asia and Europe, one of its shrunken relics being the present Mediterranean Sea. The uplift of these vast mountain masses took place at a geologically recent date.

The Punjab climate.

6. The climate of the Punjab plains is determined by their distance from the sea and the existence of formidable mountain barriers to the north and west. The factor of elevation makes the climate of the Himalayan tracts very different from that of plains. Still more striking is the contrast between the Indian Himalayan climate and the Central Asian Trans-Himalayan climate of Spiti, Lahul and Ladakh. The distribution of pressure in India, determined mainly by change of temperature, and itself determining the direction of the winds and the character of the weather, is shown graphically in the accompanying maps (*figs.* 1, 2). The winter or north-east monsoon does not penetrate into the Punjab, where light westerly and northerly winds prevail during the cold season. What rain is received is due to land storms originating beyond the western frontier. The branch of the summer or south-west monsoon which chiefly affects the Punjab is that which blows up the Bay of Bengal. The rain clouds striking the Eastern Himalaya are deflected to the west and forced up the Gangetic plains by south-easterly winds. The lower ranges of the Punjab Himalayas receive in this way very heavy downpours. The rain extends into the plains, but exhausts itself and dies away pretty rapidly to the south and west. The Bombay branch of the monsoon mostly spends itself on the Ghats and in the Deccan. But a part of it penetrates from time to time to the south-east Punjab, and, if it is sucked into the Bay current, the result is widespread rain. The Punjab is subject to extremes of cold and heat. During the winter the disturbances from the west which pass across the Province are as a rule preceded by a rapid rise of temperature and succeeded by a large fall, and from time to time

Fig:1. Average Barometric and Wind Chart for January.

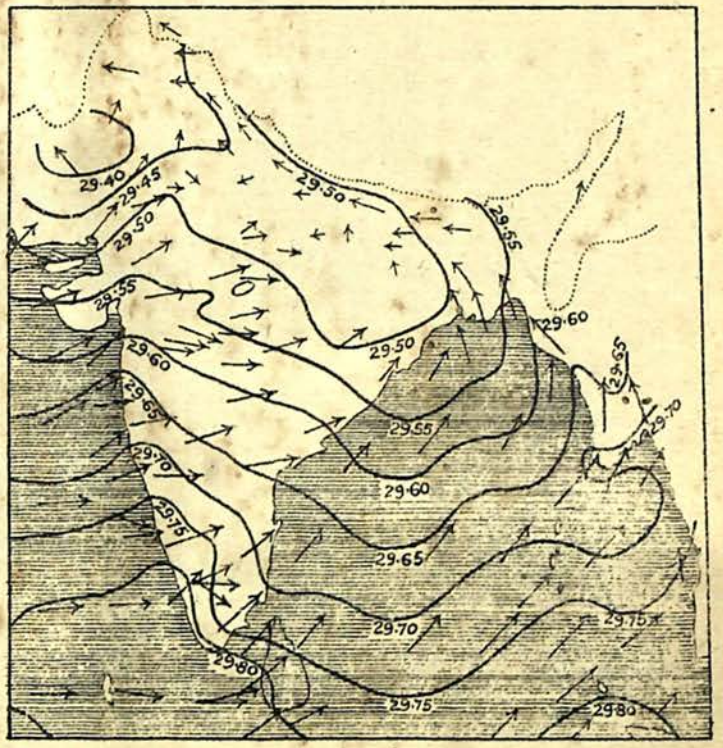

Fig.2. Average Barometric and Wind Chart for July.

temperatures several degrees below freezing point are recorded even in the plains. In the summer, which lasts from April to the end of June, hot dry winds prevail in the afternoon and in May and June temperatures from 110 to 120 degrees are recorded. The intensity of heat is relieved at intervals by the occurrence of a series of duststorms and thunderstorms which are sometimes accompanied with rain. During the monsoon season the heat, although comparatively mild on rainy days, is still intense during the breaks in the rains. It begins to moderate about the middle of September and from the beginning of October though the days are still hot, the nights are fairly cool. The months October, November and the greater part of December, during which weather is generally dry and temperature is falling rapidly, form in fact the most pleasant part of the year in the Punjab. Within the hills the seasons and their changes are similar, though of course the heat is much more moderate and the cold considerably more severe.

Punjab : Rainfall Distribution.

District.	Monsoon, June to September.	Winter, December to March.	Annual.	District.	Monsoon, June to September.	Winter, December to March.	Annual.
PUNJAB EAST AND NORTH.				PUNJAB EAST AND NORTH—*concld.*			
	Inches.				Inches.		
Hissar ...	12·21	1·87	15·26	Gujranwala ..	14·96	3·67	20·40
Rohtak ...	16·80	2·07	19·76	Sheikhupura ...	11·29	2·57	15·06
Gurgaon ...	18·89	1·85	22·08	Gujrat ...	17·43	5·12	24·89
Karnal ...	18·44	2·74	22·67	Jhelum ...	13·99	4·58	20·93
Ambala ...	27·87	4·35	34·24	Rawalpindi ...	19·88	7·53	31·08
Jind State ...	16·80	2·38	20·67	Attock ...	11·99	5·70	20·64
Bikaner State	9·20	1·17	11·48	Simla ...	29·78	9·72	45·96
Patiala State...	14·73	2·79	19·02				
Nabha State ...	13·35	2·58	17·18	PUNJAB SOUTH-WEST.			
Kangra ...	47·11	9·14	59·37				
Hoshiarpur ...	24·26	5·33	31·48	Shahpur ...	9·78	3·09	14·64
Jullundur ...	19·56	4·12	25·37	Mianwali ...	5·96	2·44	9·92
Ludhiana ...	19·48	3·55	24·73	Montgomey ...	7·16	1·66	9·55
Ferozepore ...	11·22	2·24	14·56	Lyallpur ...	8·22	1·66	10·99
Lahore ...	12·34	2·70	16·30	Jhang ...	7·64	1·65	10·32
Amritsar ...	16·35	3·85	21·77	Multan ...	4·16	1·08	5·84
Gurdaspur ...	26·94	6·70	35·80	Muzaffargarh ...	4·52	1·30	6·53
Sialkot ...	20·51	5·10	27·78	Dera Ghazi Khan	3·23	1·25	5·40

Punjab : Temperatures.

Station.	Mean maximum temperature.		Mean minimum temperature.		Record temperature.			
	May.	June.	December.	January.	Highest.	Month.	Lowest.	Month.
Simla ...	72·1	73·1	39·3	35·9	94·4	May ...	17·1	February.
Murree ...	75·8	81·4	38·6	34·9	102·0	June ...	12·0	January.
Delhi ...	104·0	103·3	48·9	47·8	118·0	June ...	32·5	January.
Hissar ...	106·5	100·8	42·8	42·7	121·1	May ...	29·0	January.
Patiala ...	102·1	101·8	41·3	44·0	116·0	June ...	30·6	February.
Ambala ...	103·7	102·7	48·1	43·3	117·6	May ...	30·7	February.
Ludhiana ...	103·9	104·7	44·4	44·4	119·0	May ...	24·0	December.
Lahore ...	104·9	107·1	41·1	41·5	120·3	May ...	20·2	December and January.
Sialkot ...	102·4	105·1	42·2	42·7	120·0	June ...	25·5	December.
Rawalpindi ...	97·9	103·6	37·4	38·1	118·0	June ...	23·0	December.
Khushab ...	103·8	107·3	41·6	41·5	122·6	June ...	25·0	January.
Lyallpur ...	102·8	106·1	39·6	39·4	118·8	May ...	26·7	December.
Montgomery ...	106·4	108·7	42·6	42·0	121·9	May ...	27·5	January.
Multan ...	106·6	108·3	45·1	44·0	121·3	May ...	29·0	January.

CHAPTER II.

HISTORICAL OUTLINE.

"The reign of Antoninus is marked by the advantage of furnishing very few materials for history, which is indeed little more than the register of the crimes, follies and misfortunes of mankind." *Gibbon.*—Decline and Fall of the Roman Empire (iii).

Invaders of the Punjab: The Moghul Empire.

7. The geographical position of the Punjab has determined its history (*para.* 2). The line of Aryan advance was probably through Kashmir, Chamba, and Kangra; but the later conquerors generally followed the well-known route through the Khaiber pass. Avoiding the desert area to the south they skirted the Himalaya till they reached the Jumna, which they followed as far as Delhi, along the line of the present Grand Trunk Road. Centrally situated; near the frontier, but not too near; in touch with the rich plains of Hindustan; with stone from the Delhi ridge available for building purposes, and well water near the surface; Delhi, even in Hindu times, achieved political importance: and Panipat, on the line of invasion within convenient striking distance from Delhi, was the scene of many a battle for supremacy. The Muhammadan invaders were quick to appreciate the advantages of Delhi, and under successive dynasties it began to acquire an imperial character. It was the capital of the Moghul Empire, which, under the tolerant rule of Akbar and his successors, seemed at one time destined to achieve Indian unity. Included in the Moghul *subahs* of Lahore, Multan, and Delhi the Punjab enjoyed a long period of comparative peace. But the religious bigotry and unbridled ambition of Aurangzeb led to a reaction against this centralising tendency. Hinduism became militant. The Mahrattas in the south, and the Rajputs and Jats further north grew less and less easy to control. In the closing years of Aurangzeb's reign signs were already visible that the downfall of the empire was not far distant, and the century after his death in 1707 saw the rise of a new power in the Punjab.

The Sikhs.

8. This power was the Sikhs, originally a purely religious sect, founded by Baba Nanak, who was born near Lahore in the latter half of

the fifteenth century. He preached a pure form of monotheism, which was eagerly accepted by the peasantry of his neighbourhood. He maintained that devotion was due to God, but that forms were immaterial, and that Hindu and Muhammadan worships were the same in the sight of the Deity. His tenets were handed down by a succession of Gurus or spiritual leaders, under whom the new doctrine made steady but peaceful progress. Ram Das, the fourth Guru, obtained from Akbar a grant of land on the spot now occupied by the city of Amritsar, the metropolis of the Sikh faith. Here he dug a holy tank, and commenced the erection of a temple in its midst. His son and successor, Arjun Mal, completed the temple, and by his wealth and the increase in the numbers of his sect excited the jealousy of the Moghul Government. Becoming involved in a quarrel with the imperial Governor of Lahore, Arjun was imprisoned in that city, where he died, his followers asserting that he had been cruelly put to death. 'This act of tyranny,' writes Elphinstone, 'changed the Sikhs from inoffensive quietists into fanatical warriors.' They took up arms under Har Govind, the son of their martyred pontiff, who inspired them with his own spirit of revenge and of hatred to their oppressors.

Military organisation of the Sikhs.

9. The first half of the 18th century was one of unusual turmoil even for India; and as has ever been the case when fighting is going on, the Punjab was in the very heart of the fray. As the century opened, the Sikhs, rapidly growing into importance as a military organisation, but as yet possessed of no national spirit to restrain their excesses, thirsted for revenge for the persecutions of the bigoted Aurangzeb and for the murder of the helpless family of their great Guru Govind. They were prompt to profit by the dissensions which followed on the death of Bahadur Shah, the last Moghul Emperor to preserve any relics of the authority of his ancestors. They ravaged the whole eastern portion of the Province from the Jumna to the Sutlej, and laid the northern and central tracts under contribution. The invasion of the great Persian freebooter Nadir Shah followed close upon their punishment, and swept like a wave of death through the Punjab ravaging and destroying all that lay in its course. And the first half of the century was fitly closed by the famines of 1753 and 1759.

10. The latter half of the same century witnessed one continuous struggle between the Mahrattas in the east, the Durranis in the west, and the Sikhs in the centre, for the possession of the Punjab plains, varied only by the rise and fall of petty marauding chiefs of every country under an Indian heaven, Rajputs, Moghuls, Jats, Biloches, Pathans, even Frenchmen and Englishmen, who saw in the decay of the Moghul Empire and the universal anarchy which prevailed, an opportunity to rise to power and to amass wealth by war and rapine. Eight times within twice as many years did Ahmad Shah invade the Punjab ; eight times had he to fight his way through the Sikh armies which sprang up on his path like Jason's foes ; eight times was his departure from the Province the signal for the Sikhs and Mahrattas to fly at each other's throats ; until even he gave up the struggle in despair, and left the Sikh *misls* to extend their conquests, always by hard fighting, till they were masters of the whole of the Punjab from the Jumna to the Indus and from Kangra and Jammu to Hansi and Multan; and, having won them, to quarrel over their possessions. The desolation which Ahmad Shah's army carried in its route is expressed by the saying still current throughout the Punjab: 'What one eats and drinks is one's own; the rest is Ahmad Shah's.' During the intervals between his incursions the Mahrattas overran the country and took Multan and Lahore, and were presently followed by the Bhangi Sikhs " whose raids and cruelty lived long in the memory of the peasants of Muzaffargarh." Meanwhile, ' various men of influence made themselves independent, and exercised all the privileges of independent rulers as regards fighting with each other, and robbing and murdering those weaker than themselves. Might was the only test of right, and in the absence of any general controlling authority the country became a prey to the ambition of rival chiefs struggling for supremacy.' The history of the Punjab during these terrible fifty years is one continuous story of war and bloodshed. The whole Province was in arms. Almost every considerable village or small town had its local chief, with a band of followers ready to fight for plunder or power ; and the incessant turmoil in which these gentry kept the country was interrupted only when they united against a common enemy from without.

Struggle between the Sikhs, Afghans and Mahrattas.

The great famine of 1783.

11. In the midst of all this misery came the 'great famine,' as the people call it, of 1783. In the east of the Punjab "the country was depopulated, the peasants abandoning their villages and dying in thousands of disease and want; the country swarmed with bands of thieves and highway robbers, and the state of anarchy was almost inconceivable. In the fertile and populous central districts 'wheat sold at from 1½ to 2½ seers for the rupee, the people fled to Hindustan, Kashmir and Peshawar, the seeds of the acacia and the cotton plant were greedily devoured, so many died of starvation that bodies were thrown into the wells unburied, mothers cast their children into the rivers, and even cannibalism is said to have been resorted to. The cattle nearly all died, or were eaten up by the starving Muhammadans. Many ruins of old villages are traceable to this famine; and stories are still told of the extraordinary friendships which grew up among the survivors, who clung together, sharing with each other everything available as food. The famine was followed by great mortality from fever and ague, and a large proportion of those who had escaped starvation fell victim to disease.' Even in Hazara, which escaped untouched by the many droughts which have since devasted the Punjab, 'this famine fell with terrible severity. Grain sold at 3½ to 4½ seers per rupee, and was not to be had even at that price when the famine was at its height; and popular accounts describe the district as nearly depopulated.'

Rise of the British power in India.

12. The anarchy which followed everywhere on the dissolution of the Moghul Empire inspired several attempts to revivify it. Under the leadership of the great Sindhia, the Mahrattas tried to run it as a going concern; but their defeat by Nadir Shah at Panipat paralysed their power, and left the British the only effective political force in India. With their subsequent victories over the Mahrattas and the acquisition of Delhi, the British seemed marked out as the successors of the Moghuls; and found themselves face to face with the newly risen Sikh power in the Punjab.

Rise and fall of Ranjit Singh's Kingdom.

13. By this time the Sikh religion had come to present very different features from those of Baba Nanak's peaceful theocracy. It had grown into a loose military organization, divided among several *misls* or confederacies, with a common meet-

ing place at the holy city of Amritsar. The Moghuls had nominally ceded the Punjab to Ahmad Shah; but the Durrani kings never really extended their rule to the eastern portion, where the Sikhs established their authority not long after 1763. The Afghan revolution in 1809 facilitated the rise of Ranjit Singh, a Sikh adventurer, who had obtained a grant of Lahore from Zaman Shah, the Durrani ruler of Kabul, in 1799. Gradually this able chieftain spread his power over the greater part of the Punjab, and even as early as 1808 began to attack the small Sikh principalities on the east or left bank of the Sutlej. These sought the protection of the British, now masters of the North-Western Provinces (as the present United Provinces were then called), with a protectorate over the royal family of Delhi ; and an agreement was effected in 1809 by which Ranjit Singh engaged to preserve friendship with the British Government, and not encroach on the left bank of the Sutlej, on condition of his sovereignty being recognized over all his conquests north of that river. This treaty he scrupulously respected till the close of his life. In 1818 Ranjit Singh stormed Multan, and extended his dominions to the extreme south of the Punjab; and in the same year he crossed the Indus, and conquered Peshawar, to which shortly after he added the Derajat, the southern portion of the present Frontier Province, as well as Kashmir. He had thus succeeded during his own lifetime in building up a splendid power, embracing almost the whole of the present Punjab, Frontier Province, and Kashmir. But the power which he had erected with such laborious statesmanship was rapidly dissipated by his successors. Six years of anarchy were terminated by two bloody wars with the British, and so the Punjab passed under English rule.

British sphere of influence round Delhi.

14. By the treaty of Anjangaon, dated December, 30th, 1803, between the British Government and Daulat Rao Sindhia, the latter had ceded to the British all his 'forts, territories, rights and interests' in the countries north of the Jumna. This involved also the abandonment of his interests in the territory to the north of Delhi, west of the Jumna. The country in question was at that time in a state of anarchy. With the decay of the Moghul power the area between the Jumna and the Sutlej had become a prey to

three contending forces. On the west in Bhattiana the Bhattis, under their leaders Bahadur Khan of Fatehabad and Zabita Khan of Sirsa, were able to maintain some semblance of rule. But in the south the more peaceable inhabitants had been overrun by the Mahrattas and their adherents, who ruled each for himself such amount of territory as his sword could control. Towards the Sutlej a similar state of affairs was created by irruptions of Sikhs from the north. The result was constant turmoil ; rulers rose and fell, states appeared and disappeared ; while the people of the country were prostrate before the invaders against whom they could offer no resistance.

Policy of "Buffer States."

15. Upon the defeat of the Mahrattas the policy adopted by the British Government was to make the Jumna the limit of British territory and to interpose between that border and the northern powers a buffer of semi-independent states in the ceded territory. A Resident was appointed in Delhi to keep the peace of the border land, interfering as little as possible in the administration of the country. The existing rulers were maintained in their possessions, and, if in any case no claimant could be found, the estate was made over by grant and assignment or in farm to some deserving soldier or neighbouring chief. The still existing Native States of Pataudi, Dujana, and Loharu date from this period. Except in the immediate vicinity of Delhi itself direct administration was sedulously avoided.

Relations with cis-Sutlej Sikh States.

16. The policy of buffer States was seriously endangered by the encroachments of Maharaja Ranjit Singh south of the Sutlej, and the British Government viewed with apprehension the advance of the powerful Lahore ruler towards the British frontier. Some of the Sikh invaders in the country south of the Sutlej had before 1803 become feudatories of Sindhia, and they naturally came under the British suzerainty ; but the majority were still outside the scope of British superintendence. An appeal to the British by these cis-Sutlej Chiefs in 1808 was gladly entertained, and by the treaty of Amritsar, signed in April 1809, Ranjit Singh resigned all design upon the cis-Sutlej States, which the British Government undertook to keep intact under its protection, reserving solely the right to escheats.

17. The raids of the Bhatti chiefs from the west, where they still maintained their independence, had by 1810 become intolerable, and in that year Bahadur Khan was defeated and Fatehabad annexed; the defeat of Zabita Khân following in 1818. No effort was made to administer the country which was practically left to itself, and encroachments by the Chief of Patiala subsequently became the subject of a long protracted dispute.

Reduction of Bhattiana.

18. The defeat of the Gurkhas by General Ochterlony in 1815 brought under British control the hill area south of the Sutlej, which they had overrun. The policy adopted was the same as in the plains. The hill territories were made over to such chiefs as could substantiate any claim to having ruled in the hills before the advent of the Gurkhas, and the States so established were placed under an Assistant to the Delhi Resident stationed at Subathu. In the hills this system proved permanent, and the Simla Hill States remain to-day substantially as originally established.

1815. Advance in the hills.

19. In the plains it was different. The chiefs established were themselves conquerors and of no long standing. It soon became apparent that the policy adopted must fail. The turbulence of the many chieftains and the impossibility of stopping the kaleidoscope at the point it had reached in 1803 made it hopeless to attempt to secure a settled administration on the desired lines. The treaty with the cis-Sutlej Sikhs was faithfully observed, though it involved the recognition as rulers of chiefs of individual villages or even of confederacies of Sikh horsemen holding villages in shares amounting in some cases to no more than one-twentieth of a single village, and only escheats came under direct administration. In the Delhi Territory confiscations for mismanagement and resumptions on the death of the original grantee very gradually brought to an end the unsatisfactory conditions prevailing. A summary settlement of the land revenue was carried out in each such case and law and order introduced.

Failure of policy of "Buffer States."

20. Direct control in the Delhi Territory was exercised at first by the Resident at Delhi, but the constantly increasing area to be administered led in 1819 to the formation of four "divisions" under Principal Assistant

1819. Administrative changes: Organisation of districts in the present (Ambala) Division.

Commissioners, who exercised executive control under the orders of the Resident. These four "divisions" were the beginnings of the present districts of Delhi, Rohtak, Gurgaon and Hissar. Panipat (now Karnal) was separately established in 1824, and in 1832 these five districts were brought under the Regulations (*para.* 69) and included in the North-Western Provinces, with which they remained for 26 years. One of the results of this development of the administration was the closer attention paid to affairs in Bhattiana. After a long boundary contention with Patiala the British Government asserted its supremacy over the country upon which encroachment had been made, and a separate district of Bhattiana was established about 1837, subsequently becoming part of the later Sirsa district. These six districts were grouped for administrative purposes into the Delhi and Hissar divisions and were in due course put under regular settlement.

The cis-Sutlej States.

21. Meanwhile political control over the Sikh States was exercised until 1840 by the British representative at Delhi and his Assistants, who were also responsible for the administration of the territories which lapsed in default of heirs. In 1840 an Agent to the Governor-General was appointed for the North-West Frontier with head-quarters at Ambala, and in 1842 the administration of the lapsed territories also was transferred to him. At the end of 1846 in consequence of their misconduct during the First Sikh War the most flagrant offenders among the defaulting States were punished by confiscation and the remainder were deprived of their police jurisdiction and of their right to levy customs and transit dues, while the obligation to furnish troops was commuted for a money payment. Nine Chiefs only were exempted from this arrangement and allowed to retain full powers. Of these, Patiala, Nabha, Jind, Maler Kotla, Faridkot and Kalsia still survive, but Dialgarh lapsed in 1852, Raikot in 1854, and Mamdot was annexed in 1855 in consequence of the misconduct of the Nawab. The head-quarters of the Agent to the Governor-General were transferred to Lahore, where he was entrusted with the duty of reorganising the shattered government of the Punjab, and a Commissioner of the cis-Sutlej States was appointed at Ambala. Districts were formed at the same time at Thanesar, Ludhiana, Ferozepore and Ambala out of the lapsed and confiscated territories.

22. A further consequence of the First Sikh War was the cession by the Lahore Government of the area between the Sutlej and Beas in the plains and of Chamba and Kashmir in the hills. The policy which endeavoured to maintain buffer States had been abandoned. The ceded territories became the districts of Jullundur, Hoshiarpur and Kangra under a Commissioner of the trans-Sutlej States at Jullundur, while the Chief of Kapurthala was maintained in independent possession of his estates in the newly ceded area. In the hills their possessions were secured to the Chiefs of Mandi and Suket. Chamba, which was at first given to Kashmir, was declared independent in 1848. The Kangra State had for some twenty years been in the possession of the Sikhs and in consequence became, as stated, a British district. The Commissioners, cis- and trans-Sutlej, were for two years placed directly under the Supreme Government, but in 1848 became subordinate to the Resident at Lahore.

1846. Advance to the Beas.

23. It was speedily found that the position of the States, which had been deprived of police jurisdiction, was an impossible one and in 1849, after the conquest of the Punjab, the British Government assumed complete control, except in the case of the States which had been allowed to retain full powers. The villages were shortly afterwards brought under settlement, and the revenue assessed in cash. The position of the chiefs and of the communities of horsemen (known as *pattidars*) now became that of ordinary *jagirdars* or assignees of the revenue demand.

1849. Final absorption of Cis-Sutlej districts.

24. On the conclusion of the Second Sikh War the annexation of the Punjab was proclaimed on March 29th, 1849, and a Board of Administration appointed consisting of three members, who, although acting jointly in matters of importance, each took special charge of one of the functions of the Board —political, revenue and judicial. The districts were placed in charge of Deputy Commissioners, who were provided with a staff of covenanted Assistant Commissioners and uncovenanted Extra Assistant Commissioners. The districts again were divided into tahsils or sub-divisions for the collection of revenue ; and into police circles. The Board was entrusted with plenary authority to control and supervise all departments. The Commissioners were Superin-

1849. Annexation of the Punjab proper.

tendents of revenue and police, and exercised the civil appellate and the criminal original powers of a Sessions Judge. The Deputy Commissioners were given subordinate civil, criminal and fiscal powers, combining in one person the different aspects of the administration, and thereby much increasing its vigour.

Legal and Administrative measures.

25. The first object of attention was to place the revenue system on a sound basis. Settlements made during the regency of the Resident were upheld as temporary measures, and in tracts that had not been previously settled summary settlements to last five years were made, pending the introduction of regular settlements which would endure for from fifteen to thirty years. In the civil courts the rules current in the Sutlej divisions were at first observed, as they were calculated to ensure substantial justice unfettered by technicalities. Subsequently a Punjab Code, embodying much of the customary civil law of the Province, was prepared. In criminal law the code adopted during the period of the Residency was maintained. One of the principal duties of the new Government was to develop the resources of the country, to make canals, and, most important of all, to create roads; from a civilized point of view, the latter did not exist in the country when it was taken over. The principal and earliest work of this kind that was undertaken was the construction of the Grand Trunk Road to connect Peshawar with Lahore. The Bari Doab Canal was commenced, and many other works of public utility were either projected or undertaken.

Military and Police measures.

26. A strong body of military police under European military officers, comprising six regiments of foot and twenty-six troops of horse, in all 8,100 strong, was raised in aid of the civil police, the establishment of which was of the strength of 6,900 men of all grades. The military police furnished guards and patrolled the country, and acted in the prevention of crime and apprehension of offenders, while the civil police, who were under the charge of civil officers, were entrusted with the detection and prosecution of criminals, and the duties of watch and ward in towns and villages. The general disarmament of the part of the Province lying between the Indus and the Sutlej was carried out. (The cis-Sutlej divisions and the territory round Delhi were disarmed at a later date.) In

all 119,700 arms of all descriptions were seized or surrendered. The sale, possession or manufacture of arms and ammunition, except in the trans-Indus tracts, was prohibited. In the frontier districts it was of course necessary to leave the people armed, in order to enable them to cope with their marauding neighbours of independent territory. With regard to these, special military measures were undertaken. The forts at the principal stations were repaired or rebuilt upon more scientific principles, a chain of fortified border posts was dotted along the whole length of the border line, parallel to which a military road was made with cross branches connecting it with the internal net-work of communications being established in the Province. A special force, the Punjab Frontier Force, under the direct orders of the Board, was raised for service, normally on the frontier, and only in special cases elsewhere. It consisted, at first, of five regiments of cavalry, the Corps of Guides, five regiments of infantry, three light field batteries, two garrison batteries, two companies of sappers and miners, and the Sind Camel Corps. Mule batteries were afterwards entertained in the Frontier Force, in place of the field batteries ; the sappers and miners were withdrawn, and a Gurkha regiment was added to the force. A few years after annexation the Camel Corps was changed into a regiment of infantry. The later history of the Frontier Force pertains to the administration of the North-West Frontier Province.

Further improvements carried out.

27. The work of reclaiming the country, of civilizing its people, and of developing its resources was carried on without interruption for the next seven years. The Punjab became gradually covered with the institutions of modern civilization ; roads were made in every direction ; canals were projected or constructed ; schools, dispensaries and jails were erected in every district ; a uniform code of civil and criminal law and procedure was adopted ; the currency was reformed ; taxation on trade was removed ; and a system of regular settlements was commenced, which was designed ultimately to embrace the whole Province, and in the course of which the *status* of all classes connected with land, the shares of the produce which one class could demand from the other, and the portion which was due to Government, were accurately defined and recorded.

28. In 1853 the Board of Administration was abolished, and in its place Sir John Lawrence was appointed the first Chief Commissioner, as the head of the local executive administration, with control over the Punjab Frontier Force. Subordinate to him were appointed a Judicial and a Financial Commissioner, who were the chief authorities in the Judicial and Revenue Departments, respectively. The Judicial Commissioner was also head of the police: he supervised educational operations and superintended the control of Local and Municipal Funds. *Thaggi* was virtually exterminated and the Mazbi Sikhs, among whom this crime was prevalent, were employed as organised bodies of labourers.

1853. Sir John Lawrence, Chief Commissioner.

29. The next three years from 1853 to the close of 1856 constitute a period of consolidation, during which the measures originated in the earlier years were completed or perfected. The construction of a railway from Multan to Amritsar was under consideration, when the outbreak of the mutiny put aside, for a time, that and many other schemes for the improvement of the country. The story of the mutiny and the part in it played by the Punjab have now become matters of history. It will be sufficient to notice briefly the subsidiary measures in aid of the military operations for the suppression or prevention of the rising in the Province. Civil officers were immediately empowered to try and punish summarily, even with death, offences affecting the public tranquillity; a strict but judicious censorship was maintained over the native press; all letters addressed to sepoys were opened, and much curious and valuable information was thereby obtained. All treasure was concentrated at places where a European guard could be obtained. The ferries over the five great rivers of the Punjab were guarded with special care, and the country was thus divided into blocks of territory insulated from each other. All Hindustanis without employment were deported out of the Punjab, and mendicants and roving *fakirs* coming from the east were turned back. The cis- and trans-Sutlej divisions were disarmed, 69,000 stand of arms being given up by the people. These divisions had not been included in the disarmament of the rest of the Punjab which took place in 1849. A few months later the Delhi and Hissar divisions were also disarmed, 225,000 arms being taken by

1857. The Sepoy Mutiny: Measures taken.

the police in addition to forty cart-loads of arms from the city of Delhi. The principle of recovering the value of plundered property from the persons, villages or towns implicated, by means of fines, was everywhere rigidly enforced. Lastly, the active co-operation of the people in the extirpation of the mutineers was secured by paying a reward of Rs. 50 for every mutinous sepoy delivered up alive, the captors being permitted to retain any property found on the person of the mutineer. The effect of this order was to place the Hindustanis as soon as they left cantonments among a nation of enemies. The financial position of the Province was a difficult one: all remittances from Calcutta were cut off, the demands of the besieging army before Delhi were large and it took some time for money from Bombay to reach Lahore. A loan, producing 41 lakhs of rupees, was therefore raised: it served as a useful index to the state of public opinion.

1858. Delhi Territory annexed to Punjab

30. The next few years after the mutiny were devoted to restoring order and to taking up the task of progress which had been temporarily suspended. The recovery of Delhi having been mainly due to the unremitting exertions of John Lawrence and his brilliant officers, the Governor-General deemed it fitting that the imperial city with the surrounding territory should be placed under the Government of the man who had reclaimed it from the grasp of the rebels. Accordingly in February 1858 the Delhi territory lying on the right of the Jumna, together with the confiscated territory which had formerly belonged to the Nawabs of Jhajjar and Bahadurgarh, was transferred from the North-West Provinces to the Punjab. Though politically a part of the Punjab, this area, which corresponds to the present Ambala division, is, in language, religion, and racial characteristics, more nearly allied to Hindustan. In August of 1858 two disarmed native regiments at Multan revolted, owing to misapprehensions of the intention of Government towards them. They were pursued and all of them either captured or killed. This was the last outburst of the mutinous spirit in the native army. The Hindustani regiments that were disbanded at Mian Mir and elsewhere were sent to their homes. Other military measures were the transfer to the Bengal Army of four regiments of cavalry and seventeen of infantry raised in the Punjab during the mutiny. A regi-

ment of Gurkhas was formed from men of this class in the Punjab Infantry and the Police Battalions, and added to the Punjab Frontier Force. Rewards in the shape of grants of territory were made to the Chiefs of Patiala, Jind and Nabha for the services rendered during the preceding year; and a large estate in Oudh was conferred upon the Raja of Kapurthala.

1859. Constitution of Lieutenant-Governorship: Peaceful development of the Province.

31. At the commencement of 1859 the Punjab, together with the Delhi Territory, was placed under a separate Lieutenant-Governor. Sir John Lawrence was the first to hold the office. After a brief interval he resigned and left the Province, with the administration of which he was so intimately connected ever since its annexation to the British Empire. He was succeeded by Sir Robert Montgomery.

The next fifty years furnish a story of peaceful and orderly progress. Free from invasion from without and agitation within, ruled by a succession of able administrators,* the administrative and economic development of the Punjab was rapid and permanent. The administrative system was cheap and efficient. The Land Revenue was assessed so as to secure an adequate income to Government without unnecessary hardships to the cultivator. The danger of famine was averted by the extension of irrigation and the rapid spread of a network of roads and railways over the Province. By the Land Alienation Act the manly peasantry of the Province were secured against expropriation, while Co-operation sought to solve the problem of rural indebtedness. Research and instruction, of great economic benefit to the Province, were undertaken in Agriculture and Industries. Steps were taken for the conservation of the vast forest resources of the Himalayas. Large sums of money were spent on Education. Happy in having little or no history of a melodramatic kind, the administrative and economic history of the Punjab during these fifty years in both varied and interesting.

Frontier problems.

32. The Baluchistan border, however, still remained to be pacified; and in 1882 this work was seriously undertaken. The occupation of Quetta, Peshin and Thal Chotiali contributed materially towards an effective control over the hill clans on the Lower

*A list of the Lieutenant Governors and Governor of the Punjab is given in Appendix I.

Derajat border. Crime was suppressed, blood feuds kept under control and relations between the tribes themselves were maintained on a satisfactory basis. Since 1890, when the political control of the Baluchistan Agency was extended over the Zhob Valley, the whole aspect of affairs has become changed. By a notification of the Government of India, issued in November 1889, the jurisdiction of the Deputy Commissioner of Dera Ghazi Khan and the Commissioner of the Derajat (at present day of Multan) was extended over the hill country of the tribes adjoining that district, who had hitherto been under their political control only, from the boundary of the district on the south to the boundary of the Bozdar tribe on the north. This measure materially contributed towards efficient tribal management on that part of the border; and it was subsequently extended to the Bozdar country also. Further north the Afghan border had difficulties of its own. Fear of Russia dominated British policy in the middle of the nineteenth century, and the Afghan Amirs vacillated under the threats of their two powerful neighbours. An important preliminary step was taken in 1876 by the occupation of Quetta in Baluchistan which was effected by amicable arrangement with the Khan of Khelat. The strategical position thus secured dominated the road to Kandahar and gave the Government of India full control over the Bolan Pass. Matters reached a crisis in 1878 when the Amir deliberately affronted a British envoy. War ensued. The military operations, admirably planned and brilliantly executed by General (Lord) Roberts, were so completely successful that Amir Sher Ali fled into Russian territory, from which he never returned. The resources of the Province were fully taxed, as it formed practically the base of operations for the armies operating in Northern Afghanistan. In the earlier phase of the war contingents from the States of Patiala, Bahawalpur, Jind, Kapurthala, Faridkot and Nahan joined the British force, and performed excellent service. The Viceroy, Lord Lytton, had adopted a forward policy. His successors were more pacific. In 1885 an interview was arranged at Rawalpindi with the Amir Abdurrahman, who was vacillating between England and Russia. There was a marked display of loyal and warlike feeling in the Province, and the offer of services then made by the ruling chiefs of the Punjab resulted later in the formation of the Imperial Service Corps.

Separation of the North-West Frontier Province.

33. But the Afghan Frontier still continued to exercise the imagination of the Government of India. Dealings with the tribe were in the hands of the Punjab Government, which had the Frontier Force and Guides at its disposal. The results had been unsatisfactory. Scores of raids had been made into British territory, and punitive expeditions had failed to produce any permanent effect. In 1901 the Viceroy, Lord Curzon, adopting and modifying an idea of Lord Lytton, created the North-West Frontier Province, administered by a Chief Commissioner with headquarters at Peshawar, and responsible directly to the Government of India. The Punjab Government lost all the territory to the west of the Indus, except the Dera Ghazi Khan district, and the small *tahsil* of Isa Khel. The new province also received the Hazara district, and was thus provided with charming sites for hill stations. Political relations with the trans-frontier tribes having been transferred to the Government of India, this was the only practical arrangement. The Pathan tribes in British territory were connected with the trans-frontier Pathans by tribal and family ties, as well as by trade and other relations, both friendly and hostile, arising out of propinquity and intermigration. Relations with both were now under the direct control of the Government of India.

The Kangra Earthquake.

34. The Himalayas are of recent origin (as geological time goes) (*para.* 5) and the forces which led to their formation are still in operation. On the 4th of April 1905 the hill country round about Kangra was devastated by a disastrous earthquake which levelled to the ground nearly every building within an area of 700 square miles. Twenty thousand souls perished. Among the killed were 25 out of the 76 European inhabitants of Dharmsala, including nearly the whole civil staff, and 112 of the 7th Gurkhas. No time was lost in pushing up relief parties from the plains, and in a week medical relief stations had been established at five centres; in a fortnight the treasuries were opened, and the machinery of Government was once more in motion. For the relief of distress consequent on the destruction of property generous provision was made by Government ; revenue and taxation were remitted, irrigation channels repaired, and grants of timber for the rebuilding of houses, and liberal ad-

vances of money were made: and at the same time private charity contributed over Rs. 13½ lakhs for the relief of distress to provide for which lay beyond the province of Government.

Disaffection.

35. For fifty years the Province had enjoyed internal quiet. In January 1872 a band of Kuka fanatics caused a disturbance in Malerkotla. This had been preceded by the murder of some Muhammadan butchers at Amritsar in August 1871. Repressive measures were promptly taken, and the ring-leaders were exiled. This outbreak was exceptional. But in the early years of the twentieth century the all-India agitation of the National Congress began to affect the Punjab. In the early summer of 1907, Sir Denzil Ibbetson, the Lieutenant-Governor, was called on to deal with a political agitation, which manifested itself in riots at Lahore and Rawalpindi, in seditious articles in certain newspapers, and in more overt acts calculated to discredit Government, such as the fouling of wells. The unrest was due partly to the prevalence of plague and high prices and partly to agitation against certain measures of Government, such as the Colonization Bill and the proposed enhancement of the occupiers' rates on the Upper Bari Doab Canal. It was found necessary in May 1907 to deport two of the agitators under Regulation III of 1818. As a result of this measure, of prosecutions in connection with the riots, and of legislation dealing with public meetings of a seditious character, the feeling of unrest had by the autumn considerably abated, and in November the deported agitators were released.

Separation of Delhi from the Punjab.

36. The Coronation Durbar, held in Delhi, in December 1911, by His Majesty King George V, to announce his accession to the Imperial throne, was an Imperial event. The provincial administration was deeply engaged in the arrangements culminating in the gorgeous and historical pageant, and materially contributed to the successful issue. In particular the work of the Punjab police force in handling the traffic and controlling the vast concourse, that assembled to do honour to the Royal visitor, elicited well-merited admiration. The Province accepted the gracious announcement that the seat of the Imperial Government would in future be in Delhi, and recognized as inevitable the subsequent decision that that historic city, so closely associated with the

makers of the Punjab, should cease to be under the administration of the Local Government.

Sir Michael O'Dwyer and the Great War: Maintenance of order in the Punjab.

37. In May 1913 Sir Michael O'Dwyer succeeded Sir Louis Dane as Lieutenant-Governor, and in August 1914 war with Germany broke out. During the first eight months of the War, the administration was confronted with serious dangers within the boundaries of the Province itself. The first of these was the conspiracy organised among Indian settlers and emigrants abroad to subvert the authority of Government by a nefarious policy of murder and rapine. This conspiracy originated among the Indian colony in America, and there is no doubt that assistance was given to it by individual Germans, and that the revolutionaries considered themselves in league with our enemies. In a riot at Budge Budge in September 1914 a band of emigrants, who had been refused admission into Canada, came into violent conflict with troops and police. With the object of obtaining arms and funds, an extensive campaign of murder and dacoity was then inaugurated in the Central Punjab by those who had escaped after the riot, reinforced by numerous other disaffected persons who managed to make their way into the country in spite of the Ingress Ordinance. Attempts were made to tamper with the loyalty of the troops, and a serious rising was planned for the night of 21st February, 1915, at Lahore and Ferozepore. Fortunately the country people soon showed that as a body they had no sympathy whatever with the anarchic ideas and terrorist methods of the revolutionaries, and the prompt measures taken by Government, the Police and district officials, resulted in the detection and suppression of the conspiracy before any widespread harm could result. This success had barely been achieved before another storm burst unexpectedly in the south-west of the Province, where a section of the Muhammadan rural population, partly owing to the pinch of poverty, partly encouraged by mischievous reports as to the weakness of the British Government and the successes of its enemies, took advantage of the panic caused by the outbreak of plague and the desertion of shops by their owners to begin a campaign of lawlessness and looting, in some cases combined with arson, against their Hindu neighbours. Nearly 100 dacoities were committed in the Jhang, Multan and Muzaffargarh districts before order

could be restored by the strengthening of the police and the movement of troops through the affected area. During the rest of Sir Michael O'Dwyer's administration until within a few weeks of its close right through the darkest days of the war the internal peace of the Province remained undisturbed ; indeed during the last three years there was a most remarkable decline in the amount of violent crime.

Military reputation of the Punjab.

38. With the restoration of law and order the Province was free to devote itself to the prosecution of the War. The military reputation and loyalty of the Punjab had always stood high. In less than ten years from the end of the Second Sikh War, the British and Punjabis together saved India from the Mutineers. Since then, more than ever, has India looked to the Punjab for a very large part of its fighting force. At the outbreak of War, it was found that the Punjab supplied about half the Indian soldiers in the Army and the proportion increased in the next two years. British and Punjabi soldiers had learnt their work together in many a cantonment and had fought shoulder to shoulder in all sorts of battles and expeditions, from Ashanti to Pekin. But in the great War the Punjab greatly enhanced its already splendid reputation.

Sir Michael O'Dwyer and Recruiting.

39. Sir Michael O'Dwyer was the mainspring of the Province's effort. His belief in the Punjab never wavered ; his estimate of what the Province might be called upon to do staggered the cautious-minded : but the Province proved him right. At a meeting of the Punjab Legislative Council on the 19th September, 1914, he described the Province's gallant entry into the conflict, and set the main lines of the course which the Punjabis were to follow,—' a solemn determination to maintain the proud traditions of the Province by serving His Majesty in every form in which their help may be required.' For the next twelve months, he had to concentrate his energies on the suppression of internal disorder ; as soon as this was successfully accomplished, he turned his attention to more distant parts ; but even in 1916 all that was necessary was to encourage and reward those districts which had always been the ' catchment-area ' of the Indian Army. In 1917, a new note had to be struck : the Somme offensive had not won the War, and it was clear that many months of fighting were still to come. The best

recruiting grounds were showing signs of exhaustion, and fresh fields had to be found.

Recruiting by the Military: 'Direct Enlistment' and 'Class Recruiting.'

40. For the first twenty-nine months of the War, there was no attempt on the part of the Military authorities to change the system of recruiting which had previously been in vogue. This consisted partly of 'direct enlistments' (whereby a young man whose family was connected with a certain regiment could present himself as a recruit at the Regimental Depôt) and partly of 'class recruiting' which meant that recruiting officers were posted at various cantonments with a view to enrolling recruits of a particular 'class'—Sikh, Punjabi Musalman, Jat or Dogra: the recruits were discovered by recruiting parties sent out by regiments. This system had worked well enough in peace time, but it naturally tended to restrict activity to certain well-recognized areas. In India, military service, like many other things, is largely a matter of custom, and there were whole districts which were quite unknown to the army, and likely to remain so for all time.

Limited fields for recruitment under the Military system.

41. There was also considerable exclusiveness on the part of the army and certain tribes capable of providing excellent material were barred by reason of some real or fancied social objection. This ruled out the sturdy artizans. Sayyids and Qureshis were viewed askance, because it was thought that their spiritual prestige would cut across the ordinary lines of discipline. Some quite respectable agricultural tribes were ignored, because their tribe-name was unfamiliar and therefore suspect. Another feature of the old system, which made it difficult of extension to fresh fields, was the fact that a would-be recruit had to find his way to the recruiting office in a distant cantonment, and even then might find that that particular office did not cater for his particular 'class.' This naturally smothered a great deal of nascent zeal.

Valuable aid from the Civil authorities.

42. Under this system of recruitment the districts with old military connections did best. In some of these districts, the efforts of the Military authorities had been usefully reinforced by Civil officials or by local organizations of public-spirited inhabitants. In October 1916, the assistance of the Civil authorities was invoked with a view to raising 10,000

drivers for transport. The whole number was made good in 18 days, and the Lieutenant-Governor reported that many more could have been obtained if required. This clearly showed that a valuable engine of power-supply had hitherto been ignored. Moreover it had by this time become clear that very large demands would yet have to be made upon the man-power of the Province. The German line had been violently bent but it had not broken ; the entry of Roumania into the War had apparently only added to our commitments; the end of the War was not in sight, and the well-known recruiting grounds of the Punjab were beginning to show signs of exhaustion. At the beginning of 1917 the ' class ' system of enlistment was discarded, and the ' territorial ' took its place. Each Division was given a Divisional Recruiting Officer, and to each suitable district a District Assistant Recruiting Officer, taken in most cases from the ranks of Civil officials, was appointed : it was their duty to enrol recruits of all classes within their jurisdiction.

The Provincial Recruiting Board.

43. Even this, however, was not sufficient : it was decided in the middle of the year to hand over the control of recruiting definitely to the Civil authorities. The Provincial Recruiting Board held its first meeting on July 14th, 1917, and at once set itself the task of popularizing the army among those who hitherto had no part in it, and of increasing its attractions for those who were already in it. The Board minimized the evils of competing agencies, and secured a high degree of correlation between regimental and ' private ' recruiting agencies, and Divisional Recruiting Officers. It was an accepted maxim of all the best authorities that the best possible recruiter in the wavering districts was the newly joined recruit. It was a common experince to find a youth who had but a short while before been hardly prevailed upon to leave his village, coming back full of enthusiasm and self-esteem, and persuading his friends to follow his example. One of the most successful innovations was the opening of local depôts by particular regiments for a certain length of time in places where there were large numbers of eligible men with no previous military connections. This enabled shy young men and overfond parents to see for themselves what life in a regiment meant, before committing themselves or their sons to it. It also meant that, for the first few months of their service, recruits were able to pay frequent visits to

their homes, and to exhibit to their relations what regular exercise and a soldier's diet could do in the way of converting a country bumpkin into a well-set up young man.

The great German offensive in 1918: the Punjab's response.

44. The first five months of 1918 were the blackest months of the whole War. The Germans had delivered, with apparently terrible success, blow after blow of their great offensive. The Bolsheviks had started Russia headlong down the road to ruin, by making a separate peace at Brest-Litovsk. The capture of Baghdad, it is true, had thwarted Germany's original plan of Eastern conquest ; but there seemed to be no force in Europe capable of stopping her from reaching India by way of the Caspian. In April, the Prime Minister of the United Kingdom sent his memorable message to this country: and many prepared themselves for the worst. The Delhi Conference was, however, summoned by His Excellency, and the Provinces were called upon to show what they could do. The Punjab gave its answer on the 4th of May, at a meeting called in the University Hall, Lahore, by Sir Michael O'Dwyer. Its purport was that the Punjab would raise its annual offering of recruits from one lakh to two ; that nine-tenths of these would be combatants ; and that it would not shrink from introducing conscription if the men could not be got in any other way. The pessimists shook their heads : even of the optimists many thought conscription inevitable : but the men came in according to schedule, and at the end of September the Punjab was well ahead of the estimated requirements.

Analysis of the Punjab's War effort.

45. The results of this campaign were most creditable to the Punjab. It is estimated that at the outbreak of War there were 100,000 Punjabis, including residents of Indian States, serving in the army, of whom 87,000 were combatants ; and that 380,000, of whom 231,000 were combatants, were enlisted during the War ; making a total of 480,000 who served. This total represents over a third of the entire contribution of India towards the forces of the Empire. Of the male population of the Punjab one man in 28 was mobilized ; in the rest of India one man in 150. Contributions in cash and kind from the Province and the Indian States within its boundaries were also most generous and the total amount raised for such funds as the Punjab Aeroplane Fund

(through which 51 aeroplanes were purchased), the Imperial Relief Fund, Red Cross Funds, Comforts Funds, etc., was over 2¼ crores of rupees. In addition to this, the Punjab lent to Government at least 11¼ crores of rupees, its subscriptions to both the first and second Indian War Loans being only exceeded by those of the wealthy commercial provinces of Bengal and Bombay.

Post-War Unrest.

46. The Punjab had devoted herself whole-heartedly to War effort while the War lasted, but when peace "broke out" there came a reaction. The rural areas had sent a very large porportion of their best elements to other lands to fight for the Empire. Of those who remained behind the Muhammadans began to be concerned about the probable fate of Turkey and the holy places of Islam. The spring harvest was unsatisfactory at a time when a bumper crop was sorely needed, fodder was scarce and influenza had wrought fearful havoc (*para.* 185). The commercial classes were exercised by the closer attention that was being devoted to income-tax assessment; and the townspeople, generally, were disappointed because the cessation of hostilities had brought no fall, but rather a further advance, in prices. Moreover, the politically-minded among them were speculating rather pessimistically on their prospects under the Reforms Scheme; and at the same time they keenly resented the passage by an official majority of the 'Rowlatt' Act in the Imperial Legislative Council. Among the more unsophisticated residents of the cities and towns the grossest misrepresentation of the objects and provisions of this legislation gained credence; while the more intellectual party were invited to take the vow of 'civil disobedience to the laws.' This novel stratagem, indeed, gained no support in the Province; but the time-honoured Eastern device of displaying popular resentment by a day's complete cessation from business made a strong appeal to the city population, and a successful *hartal*, which took place in Amritsar on the 30th March 1919, was followed up with a similar demonstration in that city, in Lahore and elsewhere on the 6th April, leaving behind it an atmosphere surcharged with excitement and restlessness.

Riot at Amritsar: Murders of Europeans.

47. The first collision between authority and the forces of disorder occurred at Amritsar on the 10th April. Under the orders of the Local Government (acting under the Defence of India Act) two of the leading local politicians were deported and

interned at Dharmsala. On the news becoming known an angry mob collected and, after suffering a few casualties from the fire of protecting military pickets in a frustrated attempt to rush the civil station, proceeded to commit a series of atrocious outrages in the city. The National Bank was looted and gutted and the Manager and Assistant Manager cruelly murdered; the Alliance Bank was attacked and the Manager assassinated. The Chartered Bank was saved, as well as its British officials, by the opportune arrival of armed Police. The Town Hall, Telegraph Office and Railways Goods Yard, Post Offices and Christian buildings were seriously damaged, and a British Railway Guard and a Military Works Sergeant were beaten to death. An attempt was also made on the life of a lady Missionary who was left for dead in the street. By nightfall telephone and telegraph wires had been cut: endeavours had been made to destroy the main railway line and a suburban station had been burned, while other similar outrages had been attempted or perpetrated.

General Dyer at Amritsar: Dispersal of meeting at Jallianwala Bagh.

48. The mob violence which began by being anti-Government had soon developed into anti-European hostility. Late in the night troops arrived, and the Commissioner requested the senior military officer to take such steps to restore order as the military situation required. The next two days (in the course of which Brigadier-General Dyer of the Jullundur Brigade had arrived) were spent in re-establishing control of the city and its environs. On the evening of the 13th April General Dyer marched a small body of troops to the Jallianwala Bagh, where a mass meeting was being held in disregard of an order already proclaimed by him forbidding any procession or assemblage of more than four persons. Fire was opened on the crowd at close quarters, resulting in the death of 379 persons and the wounding of others, the number of whom has never been accurately known.

Riot in Lahore: Proclamation of Martial Law.

49. In the meantime at Lahore, on the 10th April, it became known that Mr. Gandhi had been refused permission to enter the Punjab and that the Amritsar outrages had occurred. Dispositions of police and troops were quickly made. A city mob proceeded up the Mall towards Government House, and on refusing to stop was fired on by the police

and suffered a few casualties. Later on, it became necessary again to fire on a crowd assembled by one of the city gates. Various manifestations of sedition in and around the city, accompanied by some violence, marked the passage of the next two or three days ; and on the 14th April three leading politicians associated with the '*hartal*' were deported. The next day martial law was proclaimed in Lahore and Amritsar, being extended subsequently to the Gujranwala, Gujrat and Lyallpur districts.

Further outrages: Withdrawal of Martial Law.

50. Other instances of outrages may be more briefly recounted. At Kasur, two warrant officers were murdered by a mob on alighting from a train at the railway station, which was sacked. Other Europeans were rescued with difficulty from death at the hands of the crowd. Post offices were looted or burned, and finally the gathering was dispersed by the fire of the police. At Gujranwala violence was not indulged in until the 14th April, when attacks were made on the telegraph and telephone wires and the mob was fired on by the police in the course of an attempt to destroy the main railway line. Subsequently, the post office, tahsil, English church, dâk bungalow and district court were burned : and order was not restored until three areoplanes arrived and employed bombs and machine-guns to scatter the crowds. The disorder which showed itself in the town of Gujranwala spread extensively in the Gujranwala district, outbreaks occurring in fourteen different places, including attacks on Europeans and on the railway and its communications. In Gujrat a mob which had made an attack on the Mission School and the railway station at headquarters had to be dispersed by fire, while one or two comparatively minor outrages, such as the derailment of a train and cutting of telegraph wires, were reported. In Lyallpur district also damage was done to Government property and railway communications. In other districts there were sporadic outrages and incidents, many of them in cantonments or at important points on the main lines of railways. In some cases the railway staff, which had grievances of its own, took a hand in fomenting disturbances or organizing strikes. From the 17th April the most serious manifestations practically abated, although wire-cutting took place as late as the 2nd May. The declaration of war by Afghanistan six days later imported a new element of uncertainty into an improving situation. But by the 11th June martial law

had been withdrawn from all areas except the railways; and this exception was abolished on the 25th August.

Martial Law procedure.

51. For the trial of offenders by Commissions three martial law ordinances were promulgated. In addition, minor offences under martial law were disposed of by officers (mostly military) exercising summary powers and known as Area officers, or by civil officers. On the termination of martial law, tribunals were appointed under the Defence of India Act to try the more serious remaining cases. A large number of persons were sentenced by the courts to various terms of imprisonment, but during the summer the Local Government took occasion to modify a considerable proportion of the sentences, and towards the end of the year two High Court Judges were appointed to revise all sentences of summary courts and many of the sentences passed by the Commissioners. Finally, on the 23rd December, His Majesty the King-Emperor issued his gracious proclamation of clemency. This was extended to all offenders except those condemned for the most heinous acts of violence.

Enquiry into Martial Law methods: The Hunter Committee.

52. The methods adopted for repressing the disorders were subjected to a good deal of public criticism, and a Disorders Inquiry Committee was appointed in October 1919 under the presidency of Lord Hunter, to enquire into the circumstances of the rising and its repression in the Punjab and other Provinces. The public was eagerly awaiting the decisions of the Hunter Committee, but the publication, on the 28th May, 1920, of the report and of the despatches concerning it, which had passed between the Government of India and the Secretary of State of India, failed to satisfy a large section of the Indian community, bent as they were upon the exemplary punishment of those who had exercised what they considered to be undue harshness in the administration of martial law. The visit of His Royal Highness the Duke of Connaught in the autumn, conveying a message of goodwill from His Majesty the King-Emperor, undoubtedly had a good effect in assuaging to some extent the bitter feelings which existed before his arrival in India.

Renewed agitation: Non-co-operation.

53. A meeting of the Punjab Provincial Conference was held at Jullundur in April 1920. Bitter views were expressed on the Punjab disturbances and the Khilafat question

and speeches were made in favour of general non-co-operation, including a boycott of the Army and the Police and a refusal to pay taxes. The resolution ultimately passed by the Conference omitted mention of the more extreme measures advocated by some of the speakers, but opportunities of trouble presented themselves. The first occurred on the 20th of April, when a guard of the North-Western Railway headed a strike of five thousand men employed in the Carriage and Wagon Shops. The strike lasted until the second week in June. Then the announcement of the Turkish peace terms in May caused widespread disappointment throughout the Province, and the Central Khilafat Committee used the occasion to work up a number of its followers in Sind to embark upon the ill-fated 'Hijrat' to Afghanistan. The Muhajirin were met at important stations during their journey through the Province by Punjab sympathizers whose fanatical speeches soon popularised the movement and induced more and more Musalmans to join the secessionists. For some weeks there was a steady exodus, but when the Afghanistan authorities in August declined to admit any more Muhajirin within their borders, the end came abruptly and disillusionment produced something of a reaction of feeling.

Rapid spread of disaffection: The Sikhs join the non-co-operators.

54. Several leaders of the anti-Government party visited the Province in October 1921 and largely through the excitement raised by their presence and preachings, the Sikh League adopted the non-co-operation resolution at its annual session held in Lahore. As far as the resignation of titles and the withdrawal from candidature for the Council elections were concerned, the effect was nugatory, but among the students and professors of the Khalsa College at Amritsar the result was of some moment, while in Lahore the students of the Islamia College and the Muslim High School also went on strike. In Jullundur and Hoshiarpur, too, where there is a large element of returned Sikh emigrants, many violent meetings took place. The intensity of the agitation at length called for some action on the part of Government and on the 25th October the Seditious Meetings Act was proclaimed in the districts of Lahore, Amritsar and Sheikhupura. Later the Act was applied to the towns of Lahore and Amritsar and to the Jullundur district.

The Reform Scheme in practice: Sir E. Maclagan the first Governor of the Punjab.

55. When these events have been long forgotten, the year 1921 will yet be memorable for the change in Government which was effected in accordance with the provisions of the Government of India Act, 1919, which gave legislative sanction to the Montagu-Chelmsford Reforms. Sir Edward Maclagan, K.C.S.I., K.C.I.E., who had succeeded Sir Michael O'Dwyer as Lieutenant-Governor on the 26th May 1919, was appointed, on 3rd January 1921, as the first Governor of the Punjab, with an Executive Council of two Members and with two Ministers. The Hon'ble Sir John Maynard, K.C.I.E., C.S.I., and the Hon'ble Sardar Bahadur Sardar Sundar Singh, Majithia, C.I.E., were appointed Finance and Revenue Members respectively. The two Ministers nominated from among the elected members of the Legislative Council for the Departments of Education and Agriculture, respectively, were the Hon'ble Khan Bahadur Mian Fazl-i-Husain and the Hon'ble Lala Harkishan Lal, the latter of whom had been deported and later imprisoned in 1919 in connection with the disturbances. To them has been entrusted the control over what are now known as 'transferred subjects,' namely, Public Works, Agriculture, Industries, Excise, Local Self-Government, Medicine, Sanitation, Education (other than European and Anglo-Indian) and Registration. The Hon'ble Mr. M. S. D. Butler, C.B., C.I.E., C.V.O., C.B.E., was appointed the first President of the enlarged and reformed Legislative Council.

CHAPTER III.

FORM OF ADMINISTRATION: THE EXECUTIVE.

Centralisation of Government in India.

56. The British Government of India developed out of a trading corporation, the East India Company, and through it inherited some of the centralised characteristics of its Moghal predecessor. The whole system of Government was operated by a lever which Parliament committed to the hands of the Secretary of State. But the system itself centred in the Governor-General in Council, to whom a large measure both of initiative and of decision was left and who exercised in theory complete control over the Provincial Governments. From the outset the burden of Government in India has been heavy. The political disintegration which preceded British rule utterly destroyed any incentive to material improvement or progress by laying its results at the mercy of the first raider. It was inevitable, therefore, that when the government of the country was assumed by the vigorous and practical British race they should have formed a conception of their responsibilities towards the people wider than that accepted for their own land.

Functions of Government in India: Multifarious activities.

57. The Government claims a share in the produce of the land; and it exercises the right of periodical reassessment of the cash value of its share. In connexion with its revenue assessments, it has instituted a detailed cadastral survey and a record of rights in the land. In the Punjab it has restricted the alienation of land by agriculturists to non-agiculturists. It undertakes the management of landed estates when the proprietor is disqualified from attending to them by age, sex, or infirmity, or occasionally, by pecuniary embarrassment. In times of famine it undertakes relief works and other remedial measures upon an extensive scale. It manages a vast forest property and is a large manufacturer of salt and opium. It owns the bulk of the railways of the country and directly manages a considerable portion of them and it has constructed, and maintains, most of the important irrigation works. It owns and manages the postal and telegraph systems. It has the monopoly of note issue, and it alone can set the mints in motion. It acts to a great extent as its own banker. With the co-operation of the Secretary of State, it seeks to steady the rate of exchange as between India and the outside world, through the action of the India

Council's drawings. It lends money to municipalities, rural boards, and agriculturists, and occasionally to the owners of historic estates. It exercises a strict control over the sale of liquor and intoxicating drugs not merely by the prevention of unlicensed sale, but by granting licenses for short periods only, and subject to special fees which are usually determined by auction. In India, moreover, the direct responsibilities of Government in respect of police, education, medical and sanitary operations, and ordinary public works are of a much wider scope than in the United Kingdom.

Origin of the Punjab Province.

58. The British dominions in India were originally divided into the three presidencies of Bengal, Bombay and Madras, but military and political exigencies led to a great extension of the Bengal Presidency to the North-West. Later legislation relieved the Governor-General (who was also in immediate charge of the Bengal Presidency) by empowering him to create the Lieutenant-Governorship of the North-Western Provinces in 1836. Sind, which was annexed before the conquest of the Punjab, was attached to Bombay as being the only province from which it could be conveniently administered ; and by this historical accident was divorced from the province to which racial ties and economic interests would have naturally joined it. On the annexation of the Punjab in March 1849, a Board of Administration was constituted for its government. Differences of opinion arose in the Board, and, as might be expected, it was found that the responsible executive functions in a province must be in a single hand. The Board was abolished in February 1853, its powers and functions being vested in a Chief Commissioner, assisted by a Judicial and a Financial Commissioner. After the transfer of the Delhi territory from the North-Western (now the United) Provinces, the Punjab and its dependencies were formed into a Lieutenant-Governorship, Sir John Lawrence, then Chief Commissioner, being appointed Lieutenant-Governor on January 1, 1859.

Limitations of provincial powers: Direct sphere of the Government of India.

59. The powers of the Provincial Government were formerly exercised under considerable limitations. At the outset, it is obvious that their responsibility for the entire country constrained the Government of India to keep some functions of Government entirely in their own hands. Connected with defence was the diplomatic busi-

ness of relations with bordering Asiatic powers, and with this again the administration of bastions of territory like the Frontier Province and British Baluchistan. There was also the business of political relations with the numerous Indian States, which was mainly, though not yet wholly, the sole concern of the Government of India. In a separate category came the administration of tariffs, the currency and the exchanges, and the debt, and also of the great commercial services like the post office and the railways, all of which concerned the whole country. Again the Central Government controlled the business of audit and accounting, and had maintained it on a uniform system for the whole country.

Supervision exercised by the Government of India.

60. But in many administrative functions also the Government of India exercised a supervising and appellate authority. On the whole, however, while they generally contented themselves with laying down general principles and watching the effect given to them, they nevertheless kept a very tight hand upon the creation of new appointments or the augmentation of salaries. This control was exercised by means of codes of instructions, executive directions, and financial restrictions.

The pre-Reforms Executive.

61. In the Punjab immediately before the introduction of the Reforms the direct administrative functions of Government were performed by the Lieutenant-Governor through the medium of the Secretariat which consisted of three executive Secretaries, styled the Chief, Revenue and Financial Secretaries, respectively, with three Under-Secretaries, a Registrar and the Mir Munshi. When the War was in progress an Additional Secretary, now known as the Home Secretary, had been added. In the Public Works Department there were also three Secretaries—the Chief Engineers—one in the Buildings and Roads Branch and two in the Irrigation Branch, the former assisted by an Under and an Assistant Secretary, and the latter by two Under-Secretaries and one Assistant. The heads of the Police and Educational Departments were also Under-Secretaries to Government in their respective departments.

The Montagu-Chelmsford Reforms: General Principles.

62. Great changes were made in these arrangements by the Montagu-Chelmsford Reforms. The object of the Reforms is the progressive realisation of responsible government. Res-

ponsible government implies two conditions, first, that the members of the executive government should be responsible to their constituents, and secondly that these constituents should exercise their power through the agency of their representatives in the Legislature. These two conditions postulate that there exist constituencies based on a franchise broad enough to represent the interests of the population generally, and capable of selecting representatives intelligently ; secondly, that there is a recognised and constitutional practice that the executive Government cannot retain office unless it commands the support of a majority in the Assembly. In India, these conditions are not realised. There must be a period of political education which can only be achieved through the gradually expanding exercise of responsibility. Practical considerations make the immediate handing over of complete responsibility impossible. Accordingly, the principle is adopted of transferring responsibility for certain functions of Government and reserving control over others, while at the same time establishing substantial provincial autonomy.

The new system of Government.

63. In the Punjab there is now a collective administration, the system of a Governor in Council. At the head of the Executive is the Governor, with an Executive Council of two members appointed by His Majesty. Associated with the Executive Council as part of the Government are two Ministers chosen by the Governor and holding office during his pleasure. No Minister can hold office for longer than six months unless he is or becomes a member of the Legislative Council.

Dyarchy.

64. The plan is adopted of making a division of the functions of the Provincial Government between those which may be made over to popular control and those which for the present must remain in official hands. These functions are called ' transferred ' and ' reserved ' respectively. In the Provincial Executive the Governor in Council has charge of the reserved subjects. This is one part of the Executive. The other part of the Executive consists of the Governor and Ministers and deals with the ' transferred ' subjects. The Ministers together with the Governor form the administration for the transferred subjects.

'Reserved' and 'Transferred' subjects

65. The keynote of the scheme, it has been explained, is the establishment of effective provincial autonomy and the introduction of responsible Government in the Provinces. This connotes a sharp division of authority between the Central Government and the Provinces and the division of the provincial administration into two parts, the Reserved subjects, namely those reserved to the Governor and his Executive Council ; and the Transferred subjects, or the subjects transferred under certain conditions to Ministers chosen from the Legislative Council.

The Secretariat.

66. The Secretariat in appearance remains much as before. The post of Revenue Secretary has been kept vacant, and a Home Secretary has been added. Transferred subjects are dealt with directly by the Minister in charge of a Department through a Secretary as hitherto. The Financial Commissioners instead of constituting a distinct *imperium in imperio* have for certain subjects received the position of Secretaries to "Government" but still retain their position as Heads of Departments.

District Administration: Work of the district officer.

67. The provincial Government's general authority descends through the Divisional Commissioner in a direct chain to the district officer. The district officer has a dual capacity ; as Collector he is head of the revenue organization, and as Magistrate he exercises general supervision over the inferior courts and, in particular, directs the police work. This applies to the whole Punjab. He can at any time be in touch, through his revenue subordinates, with every inch of his territory. This organization in the first place serves its peculiar purpose of collecting the revenue and of keeping the peace. But, because it is so close-knit, so well-established, and so thoroughly understood by the people, it simultaneously discharges easily and efficiently an immense number of other duties. It deals with the management of indebted estates, loans to agriculturists and famine relief. Because it controls revenue, which depends on agriculture, the supreme interest of the people, it naturally serves also as the general administration staff. The revenue officials and, to a much more limited extent, the police convey the orders of Government to the people in a hundred ways. Taken together, these two agencies act as the general repre-

sentatives of Government over the country to its remotest borders. Several other specialized services exist, with staffs of their own, such as the establishments for irrigation, roads and buildings, agriculture, industries, factories, and co-operative credit. These are controlled not by the district officer but by their own departmental heads; they may be regarded as a different set of strings connecting the Government with the people. But in varying degrees the district officer influences the policy in all these matters, and he is always there in the background to lend his support, or, if need be, to mediate between a specialized service and the people. It is a commonplace to say that Indian administration in the past has depended mainly upon the district officer.

District administration in the Punjab.

68. The district administration was therefore left substantially untouched by the Reforms though, the district officer's powers were considerably curtailed. Under the Governor, the Province is administered by five Commissioners (for Ambala, Jullundur, Lahore, Rawalpindi and Multan) who exercise general control over the Deputy Commissioners —29 in number—each of whom is in charge of a district. A district on an average contains four *tahsils*, each consisting of about 300 villages. The Deputy Commissioner is usually a member of the Indian Civil Service or a Military Civilian (*para.* 74.) although five Deputy Commissionerships are 'listed' for members of Punjab Civil Service (*para.* 75). The Deputy Commissioner has under him Extra Assistant Commissioners (Provincial Civilians). In some cases, one or more *tahsils* form a sub-division under the charge of a Sub-Divisional Officer who has wide powers. The *tahsil* is in charge of a Tahsildar, assisted by one or more Naib-Tahsildars. The village is under a *lambardar* or headman and in most districts the villages are grouped into *zails*, each under a *zaildar*. The *lambardars* and *zaildars* are 'village officers' and not Government servants. The district Land Records and Excise staff, though organized for special departmental purposes, is available for general administrative work.

Development of district administration: The Punjab a "Non-Regulation" Province.

69. The development of the present system has been gradual. As we have seen (*para.* 58) India was originally divided into three Presidencies. Each Presidency was empowered to enact a Code of Regulations

for its government. When therefore any territory was added by conquest or treaty to a presidency—such territory or province came under the existing "Regulations." But when provinces were acquired which were not annexed to any of the three Presidencies, the existing Regulations of the Bengal, Madras or Bombay Codes did not necessarily apply. The Punjab was one of these "Non-Regulation Provinces." The only surviving relics of this distinction lie in the facts that a Punjab district officer is called "Deputy Commissioner" instead of "Collector," and that District Magistrates and other Magistrates specially empowered under section 30 of the Indian Criminal Procedure Code can inflict a sentence of seven years' imprisonment.

Tendency to separate Judicial from Executive functions.

70. Originally, however, the distinction was much greater. Prior to the year 1875 the officers of the administration combined within the scope of their duties all judicial and executive functions. This arrangement had been in force since the annexation of the Punjab, but the rapidly increasing calls on the time and energies of administrative officers that accompanied the development and advancing prosperity of the country during the decade following the mutiny, and especially the increase of judicial work, pointed to the necessity for some steps towards the ultimate separation of judicial from executive duties, as in the Regulation Provinces. Accordingly in the year 1875 measures were introduced to relieve Tahsildars, Deputy Commissioners and Commissioners of the excess of judicial work which interfered with their efficiency. In each *tahsil* where the number of suits was large, a Munsif was posted. The judicial work of Deputy Commissioners was in twenty-three districts transferred to Judicial Assistants ; and two Additional Commissioners at Lahore and Jullundur, respectively, were appointed to aid in the disposal of civil and criminal appeals and of original criminal trials in serious offences.

Commissioners relieved of all judicial (except revenue appellate) work.

71. This scheme afforded no relief to the Commissioners as a body, and in less than seven years experience showed that further changes were imperatively called for and the following reforms were introduced in the year 1884 :—The ten Commissionerships were reduced

to six, those of Hissar, Ambala, Amritsar and Multan ceasing to exist, and the districts of which they were composed were apportioned between the divisions of Delhi, Jullundur, Lahore, Rawalpindi and the Derajat. The Sirsa district was abolished and divided between the districts of Hissar and Ferozepore. For judicial purpose the remaining thirty-one districts of the Province were divided into seven civil divisions, two Divisional Judges being appointed for each division, mainly with a view to the prompt and, in certain cases, final disposal of civil appellate work, the two Judges of each division sitting as a Bench for hearing appeals. Except in the Derajat, Commissioners were entirely relieved of civil and criminal judicial work, though not of revenue appellate business. For criminal business the Province was divided into ten sessions divisions, in three of which Joint Sessions Judges were appointed in addition to the Sessions Judge. In fourteen out of the thirty-one districts, special officers were appointed as District Judges: in the other seventeen districts the Deputy Commissioners became the District Judges, but in eleven of these Subordinate Judges were appointed with original and appellate powers to relieve the Deputy Commissioners of all civil judicial work except powers of control and the distribution of business. In the remaining six districts the Deputy Commissioners were expected to hear civil appeals, but not to decide original civil suits.

Further readjustments.

72. In April 1885 the Judges of the Chief Court represented that the Divisional Courts, which had come into being on the 1st November preceding, were quite unable to cope with the number of appeals coming before them, and before the close of the year it was found necessary to discontinue the Bench system and to substitute thirteen Divisional Courts with a single Divisional and Sessions Judge in each; and such was the state of arrears in the courts that six additional Divisional Judges had to be temporarily appointed to clear off the accumulations. The changes rendered necessary by the separation of the North-West Frontier Province reduced the number of executive divisions to five and of districts to twenty-seven, while the number of judicial divisions was reduced by one to twelve. Only eight District Judgeships were graded as posts in the Punjab Commission carrying

special rates of pay, the remainder being held by Assistant Commissioners or members of the Provincial Civil Service.

Further separation of Judicial from Executive work: withdrawal of Civil Judicial work from Deputy Commissioners.

73. This system proved adequate to the needs of the day. Any accumulation of arrears in the courts of the Divisional Judges could be met by the temporary appointment of additional Divisional Judges. Gradually, however, the increase in the volume of executive business and the desirability of still further evolving the separation of the judicial from the executive branch of the administration led to the withdrawal of civil judicial work from the remaining Deputy Commissioners, and separate officers were given the powers of District Judges in all districts. In 1914 the superior Executive Branch of the administration was regraded: the number of Deputy Commissioners was increased from thirty-three to forty-two by the inclusion in the regular cadre of nine special posts hitherto held by seconded officers, and these forty-two appointments were divided into three grades of fourteen appointments each. The increase in miscellaneous executive and political work has considerably diminished the amount of time that Deputy Commissioners can spare for original criminal work. Much of this work is now undertaken by Magistrates with powers under section 30 of Criminal Procedure Code.

The Punjab Commission: Methods of recruitment.

74. The higher posts in the administration are filled from the Punjab Commission, those in the grade immediately below from the Punjab Civil Service (formerly known as the Provincial Civil Service). The Punjab was originally a frontier province and the Punjab Commission was recruited from the Indian Army as well as the Indian Civil Service, and the Punjab Civil Service. Soon after the separation of the North-West Frontier Province, however, recruitment from the Indian Army ceased. During the continuance of the War and for two years after candidates were also nominated who had served during the War in His Majesty's Navy, Army or Air Forces, and again in 1922 similar nominations were made from surplus Army officers who were being compulsorily retired from the Indian Army. Subsequent to the Reforms, recruitment was effected by five methods:—(1) open competitive examination in London; (2) separate competitive examination in India; (3) nomination in India; (4) promotion from the Provincial Civil Service; (5) ap-

pointment from the Bar. The graded system of pay was abolished, and a time-scale was substituted, which only discriminated between superior and inferior (*i.e.* Deputy Commissioner or District Judge and lower) appointments.

Punjab Civil Service.

75. From the beginning Indians as well as Europeans were employed as Assistants to Deputy Commissioners under the title of Extra Assistant Commissioner. But they were debarred from rising to higher rank, unless they got into the Indian Civil Service through the open competition. The experiment of throwing open high appointments in the Commission was made under an Act of Parliament of 1870 (Vic. 33, cap. 8), constituting the Statutory Civil Service. The experiment was not successful and of the Statutory Civilians appointed under this Act, one only, chosen in 1888—90, is still borne on the cadre of the Punjab Commission. The investigations made by the Public Service Commission of 1886 led in 1893 to the constitution of a Provincial Civil Service. The previously existing establishment of Extra Assistant Commissioners was re-arranged in seven grades. The chief feature of the re-organization of the Provincial Civil Service was that a certain number of appointments for which members of the Indian Civil Service or Military Officers were formerly recruited were thrown open to members of the Provincial Service. These "listed" appointments are the means of giving to the more able and deserving members of the Provincial Service the responsible employment in the administration of the country which the Statutory Civil Service was originally designed to supply.

Separation of Judicial from Executive.

76. The Provincial Service was originally composed of seven grades of officials known as Extra Assistant Commissioners available for judicial or executive work, but the principle of separating judicial from executive functions and the necessity of specialisation in training led to the gradual separation of the judicial and executive branches in the highest six of the seven grades. The pay of each grade was the same in both branches. The members of the executive branch were styled Extra Assistant Commissioners, but those of the higher posts of the judicial line were known as Extra Judicial Assistant Commissioners, and of the lower as Subordinate Judges. The Provincial Service was recruited

from the Tahsildar and Munsif establishments (these being the names of the subordinate executive and judicial officers); from selected members of the various departments; and by direct appointment either on nomination or by competition.

Punjab Civil Service after the Reforms.

77. As a result of the proposals of the Public Services Commission important changes were made in the Service after 1920. The name was changed from Provincial to Punjab Civil Service. Munsifs (who have now received the more dignified name of Subordinate Judges) were included in it. The executive and judicial branches were entirely separated. Recruitment was to be entirely direct for the judicial branch, and for 50 per cent. of the executive; the remaining 50 per cent. of the executive being promoted from the subordinate services. A time scale for pay was also determined. There has been a gradual increase in the number of "listed posts," *i.e.*, those superior posts open to the Punjab Civil Service. In 1922 they consisted of six appointments of District and Sessions Judge (or five appointments of District and Sessions Judge, and one Judge, Small Cause Court, Simla); four appointments of Deputy Commissioner or Settlement Collector; one appointment of Junior Secretary to the Financial Commissioners; one appointment of Under-Secretary to Government. The initial pay of an officer of the Punjab Civil Service holding a superior appointment (*i.e.*, that of Deputy Commissioner or District Judge) was fixed at Rs. 300 above his ordinary time scale pay, after which he would get promotion according to the Indian Civil Service time scale. Such officers were made eligible, with members of the Indian Civil Service, on their merits for all posts in the Civil Service Cadre.

The Punjab Police: present constitution.

78. The Punjab Police is divided into District Police, Criminal Investigation Department and Railway Police. The combined force is under the control of the Inspector-General, who is a member of the gazetted force, and is assisted in regard to the District Police by three Deputy Inspectors-General; in regard to the Criminal Investigation Department and Finger Print Bureau by a fourth Deputy Inspector-General; and in regard to the Railway Police by an Assistant Inspector-General. The District Police are controlled by Superintendents, each district having one such officer

with the exception of Lahore which has two ; and under these officers are one or more Assistant Superintendents and Deputy Superintendents. Districts are divided into police stations, each in charge of a Sub-Inspector with an average staff of two head constables and ten constables. For some years past, police stations were placed in groups under Circle Inspectors. This system, however, has recently been abandoned and the Inspectors are now posted to headquarters for general duty throughout the district under the orders of the Superintendent. At the same time the number of Inspectors has been reduced, and their places have been taken by extra Deputy Superintendents. It was felt that control through Circle Inspectors was incomplete and it is anticipated that the new system will give increased efficiency. The number of rural police stations in th Province is 406, giving to each an average population of about fifty thousand and an average area of 240 square miles.

Under recent orders one-ninth of the superior appointments of the gazetted cadre are to be filled by officers promoted from the Provincial Service. Inclusive of these promoted officers one-third of the superior appointments are eventually to be held by Indians. Proportionate recruitment among Assistant Superintendents is being made towards this end.

The total force amounts to 1,004 officers and 19,238 men. The officers are armed with revolvers ; and 65 per cent. of the men are armed with ·303 rifles and smooth bore muskets. The rifles are issued to the first armed reserve in each district, a small force of two head constables and twenty-five constables, which is maintained to deal with dacoits, armed criminals and with outbreaks of disorder.

History of the Punjab Police.

79. For the maintenance of law and order a strong police force was from the first felt to be necessary. At annexation in 1849 a strong body of military police under European military officers comprising six regiments of foot and twenty-six troops of horse, in all 8,100 strong, was raised in aid of the civil police, the establishment of which was of the strength of 6,900 men of all grades. The military police furnished guards and patrolled the country, and acted in the prevention of crime and apprehension of offenders, while the civil police, who were under the charge of the civil officers, were entrusted with the detection and prosecution of criminals.

and the duties of watch and ward in towns and villages. By the beginning of 1860 the strength of the force had risen to 24,700 men and in addition there were the *thaggi*, cantonment and canal police. In 1861 the cis-Indus police were reorganised under the Police Act (V of 1861) and in 1863 the trans-Indus, *thaggi*, cantonment and canal police were brought under the general system ; the force being meanwhile gradually but substantially reduced. The Railway Police were organised in 1869. In 1892 a training school was established at Phillaur for the instruction of all directly appointed officers of all ranks, as well as of subordinate officers marked for promotion to higher ranks. In 1901 the trans-Indus districts and Hazara were separated from the Punjab and the police of these districts brought directly under the Chief Commissioner, North-West Frontier Province.

Lord Curzon : The Police Commission.

80. In 1903, a Commission was appointed by the then Viceroy (Lord Curzon) to enquire into the work and constitution of the Police. As a result of this Commission a third administrative circle under an additional Deputy Inspector-General was created. The Railway Police, which hitherto had been under an Assistant to the Inspector-General, was brought under another Deputy Inspector-General together with the Special—or Political—Branch of the Inspector-General's Office. A new Department for Criminal Investigation was also formed. Shortly before this time, in 1900, the Finger Print system of registration of convicts had been brought into use. The Finger Print Bureau is now said to be one of the largest in the world (which gives some indication of the criminality of the Punjabi). The rank of Deputy Superintendent of Police was substituted for the old rank of Assistant Superintendent of Police, 2nd Class. These officers were usually promoted Inspectors and were very few in number. As a result of the Police Commission the number was greatly increased, the present figure being 39. The system of Circle Inspectors was introduced at the same time ; but, as noted above, has now been abandoned.

Direct appointments.

81. The old system by which practically all promotions to the rank of Inspector and Deputy Inspector—or, as they are now termed, Sub-Inspector—were made from the men in the force, was practically abolished in the case of Sub-Inspectors and 80 per

cent. of all vacancies in that rank are now filled by direct appointment. One qualification for such appointment is that the applicant shall have passed the Matriculation Examination of the Punjab University.

Certain revisions of pay were made; but these came late, and were soon superseded by other revisions of pay as the cost of living increased. Allowances for house rent in lieu of free quarters and of horse and conveyance allowances were introduced, in order to compensate for certain disabilities under which officers suffered.

In 1911, the Municipal Police, the charges for which had hitherto been met from municipal monies, were taken over by Government.

The Criminal Investigation Department.

82. The Criminal Investigation Department as organised at first was found to be unable to cope with the heavy demands made on it in criminal and political matters. This deficiency became serious on the outbreak of the Great War, and the Department was accordingly expanded considerably. Since then it has performed most valuable work in connection with intricate and important crime of all kinds. It is staffed with some of the ablest investigators in the service ; and its aid is frequently invoked to work to a successful conclusion cases that have baffled the district police. The staff is divided into two branches for criminal and political work, but in time of emergency this distinction does not exist and both do the same work.

Rural Police: The village watchman or *chaukidar*.

83. Apart from the regular police organised on British lines there has been some success in revivifying the indigenous methods of policing which had their roots in the immemorial antiquity of the village community (*para.* 156).

Originally a menial servant of the village community, the village watchman, was paid out of the village funds in kind or in cash. This placed him in complete dependence on the headmen as representatives of the village, and this relation was legalized in 1876 by rules under the Punjab Laws Amendment Act, XV of 1875 ; but the actual appointment or dismissal of the watchmen was vested in the Deputy Commissioner. Village watchmen are appointed for each village or collection of villages ; the beats being determined by the Deputy Commissioner. Where the village watchmen in any village are five or more, one of them may be appointed

"*dafadar*" with extra pay. The *chaukidara* tax is levied from all occupants of houses in the beat by a rate assessed on the annual value of the houses. In addition to their duty of watch and ward the watchmen have powers of arrest and are jointly responsible with the headmen for reporting crime. They are further charged with the duty of reporting births and deaths at the police station at the fortnightly visit which a watchman of each beat has to make to report the state of the beat. The watchmen are not as a rule armed, but in some places they carry swords or spears. The number employed in the province is approximately 30,000.

Attempts to improve his status.

84. In 1893 the increasing difficulties of obtaining men for the post led to enquiry. It was found that the maximum pay, Rs. 3 per mensem, paid half-yearly, was inadequate, and that even so it was not always paid regularly. Power was taken to secure regular payment and the maximum salary was raised to Rs. 5 and later to Rs. 8 per mensem instead of Rs. 3. Even so the watchman is essentially a menial, generally of a low caste, almost always illiterate, and often of doubtful character. The lowness of the pay compels him to work or cultivate land to eke out a living, and his association with criminals is often alleged. It has frequently been proposed by Police Officers that these *chaukidars* should be put more under the Police and made independent of the village headmen, but the best administrative officers have always opposed this suggestion on the ground that it would strike at the root of the principle of village responsibility. The *chaukidar* is the servant of the headmen and should remain so: a principle re-affirmed by the Police Commission of 1902-03.

In a few of the smaller municipal towns a body of town watchmen is employed either alone or to supplement the regular force. The town watchmen are entertained under the Municipal Act and their pay is not subject to the same maximum as that of the village watchmen.

The *thikri pahra* system.

85. Apart from this definite service of village policemen, custom has widely emphasized the liability of all villagers for patrol service when required. The systems of *thikri pahra* (or beat duty taken in rotation by the men of the village) and *nakabandi* (or picketing of bridges, roads, etc., at night) were originally of a voluntary nature, *i.e.*, they were imposed by the village

community on its members and not by the Government on the village. The usefulness of the former, which is the more important, was clearly shewn in the disorders which characterised the outbreak of the War in the Punjab (*para.* 37); and Sir Michael O'Dwyer was so impressed with its value that he arranged for its legal enforcement where necessary under the Village Patrols Act. It proved invaluable in the disturbances of 1919 (*para.* 46 *foll.*). It should however be remembered that these disturbances were entirely engineered by the urban population. The villagers were loyal to the Government and only too anxious to co-operate in catching wandering agitators. Whether the system could be profitably exercised amongst a disaffected rural population may be doubted.

The Auxiliary Force.

86. The Auxiliary Force recruited from the European and Anglo-Indian portions of the population consists in the Punjab of one mounted and three infantry units, the Punjab Light Horse, the Punjab Rifles, the Simla Rifles, and the North-Western Railway Regiment. The Force has changed in constitution considerably in the last decade. Up till 1917 the old Volunteer Force existed. In 1917 compulsory service was introduced for all able-bodied men below the age of fifty. The new Force was known as the Indian Defence Force and it rendered useful service in the Punjab Disturbances of 1919. After the conclusion of the war compulsion was abandoned and a new voluntary body known as the Auxiliary Force was constituted. The headquarters of the Punjab Light Horse are at Lahore, with detachments at Rawalpindi and Amritsar. Delhi now has a contingent of its own, to which the former members of the Punjab Light Horse residing at Delhi have been transferred. The strength on 31st March 1921 was 174 and recruitment is proceeding. A light motor patrol has been constituted for men who possess motor cars. A Light Motor Patrol Unit has been formed at Rawalpindi from the staff of the Attock Oil Company there. His Excellency the Governor of the Punjab is the Honorary Colonel of the Punjab Light Horse.

The Punjab Rifles.

87. The Volunteer Militia Company was formed during the crisis of 1857 and was joined in the following year by Rifle Clubs which

were organised in Lahore, thus forming the nucleus of the Volunteer Force in the Punjab. In 1861 sanction was received for the formation of the 1st Punjab Volunteer Corps. During the War 1914—18 a detachment of Machine Gunners from the Battalion proceeded to East Africa on Active Service. In other branches of the Service over 200 members of the Corps proceeded on Active Service overseas. In 1917 the Battalion became 3rd Punjab Rifles, Indian Defence Force. In 1920 the Indian Defence Force was superseded by the Auxiliary Force and the Battalion became the Punjab Rifles, Auxiliary Force. At the all-India Army Meeting (1921-22) at Meerut, the Punjab Rifles were 1st in Class III and 2nd in Class IV, these being the two Classes open to the Auxiliary Force. The Battalion Hockey Team is one of the best in the Punjab. The strength of the Battalion was 648 on the 30th November 1922. His Excellency the Governor is the Honorary Colonel of the Regiment.

The Simla Rifles.

88. The Simla Rifles has now reached a strength of nearly 400 which includes two Cadet Platoons and 60 trained Regimental Lewis Gunners. The Corps has been honoured by His Excellency the Viceroy accepting the Honorary Colonelcy. The Foundation Stone of the New Headquarters Buildings was laid on the 14th October 1922 by His Excellency the Viceroy. When completed it will answer a long-felt want, and will increase the military efficiency of the force, while providing social amenities also.

North-Western Railway Regiment.

89. The 3rd or Sind, Punjab and Indus Valley Railways Volunteer Rifle Corps was formed in 1880. The designation of this Corps was subsequently changed on three occasions, and, until the introduction of the Auxiliary Force Act, 1920, was known as the 24th North-Western Railway Battalion, I. D. F. The force was reconstituted in 1920, and comprises two battalions with headquarters at Lahore and Karachi. The Corps is now designated the North-Western Railway Regiment, Auxiliary Force, India. The strength of the Regiment is approximately 1,250, all ranks. Great interest is taken in Musketry and one officer and 6 Non-Commissioned Officers were successful in passing an examination at a School of Musketry in 1922. The Lahore Battalion of the regiment possesses one of the best hockey teams in India.

Indian Territorial Force.

90 The Indian Territorial Force was inaugurated under the Indian Territorial Force Act, 1920. In the Punjab there are five units in addition to the University Training Corps. In the first instance one battalion was constituted for the Western Punjab with headquarters at Jhelum, and another for the Eastern Punjab with headquarters at Jullundur. It soon became evident that further expansion was desirable and the number was increased to the present figure of five battalions. The sanctioned strength of the University Training Corps was originally one company, but the number of graduates and undergraduates offering themselves for enrolment soon reached the strength of a battalion and it has in consequence been necessary to raise the status of the University Corps to that of battalion. The composition of the Indian Territorial Force is not limited to any particular classes or tribes.

Criminal tribes: Sir Michael O'Dwyer's measures for their reclamation.

91. The Punjab has from time immemorial been the favourite hunting ground of criminal tribes. The measures concerted from time to time since the annexation of the Province having failed to check the activities of these gangs, in 1913-14, Sir Michael O'Dwyer, the then Lieutenant-Governor of the Punjab, had a thorough investigation made into their mode of life. He determined to wean them from their criminal instincts, and his policy was given effect in the Criminal Tribes Act of 1911.

The main features of his scheme included an effective but sympathetic control of the tribes, the provision of sufficient opportunity for earning an honest livelihood, the gradual relaxation of restraint and ultimate total exemption of the well-behaved, and the education of children. The worst characters were to be removed to the Reformatory Settlement, the less criminal to the industrial and the well-behaved to the agricultural settlements. All tribes and gangs addicted to the systematic commission of non-bailable offences were notified and simultaneously registered in January 1917. This resulted in the registration and subsequent restriction of 33,000 male adults, including 11,000 members of the wandering tribes, out of a total population of 150,000 souls. In order that individuals might receive treatment in proportion to the degree of their criminality the registered members were classified on the basis of their antece-

dents and reputation. The revision of the classification since carried out has resulted in a considerable reduction of the number of the registered members, and at the end of 1920, the total number of registered males, including those in settlements who numbered 5,607, came to 18,595.

In all 28 settlements (including the Reformatory Settlement, 14 industrial and 13 agricultural) have so far been established. Three temporary settlements have been discontinued for want of work. The two important industrial settlements at Dhariwal and Bhiwani have been discontinued owing to the unsuitability of the surroundings which had been found to affect detrimentally the health of the criminal tribes. The abolition of other settlements is under contemplation, as it is the policy of Government to relieve the relatively well-behaved from supervision.

The Reformatory Settlement.

92. The Reformatory Settlement is meant for the reception of the criminal tribesmen of the worst type. The least criminal among the inmates are sent out for work, but youths, to whom it is desirable to give technical training, and others who cannot be trusted, are employed in the factory attached to the settlement. The industrial settlements now in existence are mainly labour-supplying, as distinguished from manufacturing settlements which have not yet been started owing to the difficulty in training the labour and to the high prices of raw material. The inmates are employed as far as possible on paying work and are allowed to appropriate their whole earnings. In order to provide an incentive for hard work they are paid according to the piece-work system. The co-operation of most of the religious and communal societies in the Province has been secured for this philanthropic work, and efforts are made to reform the tribesmen by economic, religious, moral and educational agencies. The highest type of settlement is the new agricultural settlement, where the most promising of the reformed members of the criminal tribes are settled on land, both by way of reward for their own reformation and as an encouragement to others. The transformation which has been wrought in the habits and modes of living of nomads as well as settled tribesmen placed in the agricultural settlements is most remarkable. Grown-up men who had no sense of morality and who were addicted to all sorts of filthy habits, after a year's stay in the agricultural settlements, bear an air of

respectability and devote themselves whole-heartedly to their work. Under the new principle laid down by Government, only habitual offenders who have not less than two or more convictions, one of which falls within the last five years, are liable to be placed in the industrial settlements. This has entailed the release of a large number of men, and has also reduced the average of future admissions. The ultimate object is the assimilation of these outcasts in the general body of the community. It has therefore been the policy to leave the more hopeful type of the criminal tribes population in their homes, and to provide economic and other aid to enable them to earn their living and to settle down as ordinary citizens.

The Punjab Tributary States.

93. Included within the boundaries of the Punjab are a number of Tributary States. The hill States, which originally sought British aid against the Gurkhas (*para.* 18), lie among the Punjab Himalayas and are held by some of the most ancient Rajput families of all India. The Muhammadan State of Bahawalpur, whose Nawab claims descent from the Abbaside Caliphs of Egypt, sought and obtained British protection from the ambition of Ranjit Singh (*para.* 16). A similar object drew the Cis-Sutlej Sikh States of Patiala, Jind, Nabha, Kapurthala, Faridkot and Kalsia into the British alliance (*para.* 16). A few Muhammadan Chiefships to the east of Lahore, Maler Kotla, Pataudi, Loharu and Dujana, derive their origin from feudatories of the Moghul Empire who managed to save themselves from being overwhelmed in its final ruin by alliance with the British. Formerly the Punjab Government was in immediate charge of political relations with these States. The democratisation of Provincial Governments under the Reforms Scheme has, however, rendered necessary a revision of their relations with the Tributary States formerly under their control. Consequently on 1st November 1921 the thirteen most important States in the Punjab were placed in direct relations with the Government of India. The only States remaining under the Punjab Government are the Simla Hill States, and the three small States—Kalsia, Pataudi and Dujana.

CHAPTER IV.

ADMINISTRATION: THE JUDICIARY.

The Pre-British judicial system.

94. Before the British occupation of the Punjab there were only two classes of officials, the military and the fiscal. In the latter were combined all civil functions whatsoever. There were no special officers either for the dispensing of civil justice or the execution of criminal law. Private arbitration was extensively resorted to. The unwritten Penal Code contained but two penalties, fine and mutilation, and there was scarcely any crime for which impunity might not be purchased by the payment of a fine.

Development of the British judicial system: Complicated procedure and its results.

95. The Board of Administration early appreciated the necessity for an organised administration of civil and criminal justice. But they were fully alive to the difficulties to be faced. Thus they wrote in their report for 1849-50, that "they can hardly consider that civil justice has advanced as satisfactorily as the other branches of the administration. Indeed they are not sure that it will ever be successful. There is no part of the British system so difficult to popularise." Accordingly in the civil courts the rules current in the Sutlej divisions were at first observed, as they were calculated to ensure substantial justice unfettered by technicalities. Subsequently a Punjab Code, embodying much of the customary civil law of the province, was prepared. In criminal law the code adopted during the period of the Residency was maintained. In 1871-72 the provisions contained in the Punjab Civil Code and in various Bengal Regulations and administrative rules and orders were consolidated and re-enacted in the Punjab Laws Act. In 1874-75 regular civil courts were established which took over from District Officers and their staffs the settlement of suits for debts against agriculturists. These courts were, for the most part, presided over by Munsifs recruited from the towns and for that reason ill-versed in rural affairs and customary rights in land. The complaint that the unsuitability of the civil courts and the civil law are in part responsible for the increase of debt is heard from most parts of India, as well as from other agricultural countries, such as France. The peasants, according to an experienced administrator, Mr. Thorburn, soon came to re-

gard them as agents and debt collectors for the money-lenders.

Punjab Customary Law.

96. These difficulties arose from a complicated procedure ill-suited to the needs of an illiterate peasantry. The Courts were careful, almost too careful, in their determination of the exact custom followed by the people in cases, such as those of inheritance, where the Punjab had a custom of its own. From their decisions grew up a valuable body of law, judicially determined, known as the Punjab Customary Law. But this concession to the feelings of the people was largely nullified by the complicated procedure which obtained. Some relief was obtained by the transference of suits regarding tenant rights, rents and cognate matters to Revenue Courts (*para.* 102). To obviate some difficulties a scheme was also brought into operation in 1914 for the training of Munsifs in the details of Revenue work. It had always been a special feature of Punjab administration that officials should receive an all-round training. Assistant Commissioners, for instance, always received a training in civil work, even though they were destined for executive work.

The Chief Court.

97. On annexation judicial affairs were entrusted to a Judicial Commissioner who was also head of the police, and resopnsible for Education and the control of Local and Municipal Funds. In 1866 a Chief Court consisting of two Judges, a Civilian and a Barrister, was substituted for the Judicial Commissioner, and was constituted the final appellate authority in civil and criminal cases, with powers also of original criminal jurisdiction in cases where European British subjects were charged with serious offences, and of original civil jurisdiction in special cases. In the year 1869 a third Judge, a Civilian, was added to the Court. The constitution of the Chief Court subsequently remained unaltered until 1881, when the steadily increasing work made it necessary that some assistance should be given to the Judges. In October of that year the temporary appointment of a fourth Judge was accordingly sanctioned. Notwithstanding this addition to the Court, it was found in July 1882 that the number of civil appeals pending was considerably in excess of that on the corresponding date of the preceding year, and in the following November two addi-

tional Judges were employed. From time to time it was found necessary to retain the services of these additional Judges, and in the latter half of the year 1886 the appointment of a fourth permanent Judge was sanctioned. The abolition in 1885 of the Bench system in the Divisional Courts (*para.* 99), added to the number of appeals preferred to the Chief Court, and so congested became the state of work in it that for some time it was necessary to employ six Judges, while in 1888 the Punjab Courts Act of 1884, by which the present system was introduced, had to be amended so as to diminish the appellate business of the highest tribunal in the Province. Although it was then found possible to reduce the number of Judges to five, arrears again became marked in 1895 and 1896, and at the end of that year the strength of the Court was again raised to six (four permanent and two temporary) Judges. In 1899 the law of appeal as embodied in the Punjab Courts Act was further amended, but the hopes that the Court would now be able to cope with the work proved fallacious, and in 1904 it became necessary to employ four temporary Judges to clear off arrears. A fifth Judge was at the same time permanently added to the Court. Even these measures proved inadequate. One temporary additional Judge was constantly employed, and a second was frequently found necessary. The law of appeal was amended by Punjab Act I of 1912 in the hopes of reducing the number of appeals, but as the amended Act did not affect the rights of appeal existing on the 22nd January 1912, the date it came into force, the effect of the Act in diminishing the volume of the appellate work which reached the Chief Court could only be gradual, and it was therefore found necessary to retain the services of the sixth and seventh Judges for the further period of two years with effect from August 1912.

The Act did not however at the end of these two years make any appreciable reduction in the work and as a matter of fact the steady annual increase in the institution of the more important classes of cases compelled the retention of the sixth and seventh Judges up to the date of the raising of the Chief Court to the status of a High Court.

Conversion of Chief Court into a High Court.

98. The conversion of the Chief Court into a High Court was mooted as long ago as 1886, the inferior status being represented as a slur on the Province. The change was sanctioned by the Secre-

tary of State in 1916, but it could not take effect till the War was over, and was only finally brought into force on 1st April 1919. The High Court sits at Lahore, and is composed of a Chief Justice and six puisne Judges (either Civilians or Barristers). An eighth temporary Additional Judge was appointed for two years with the hope that this staff would be able to cope with the work, but this hope was falsified, partly owing to the additional work involved in a High Court as compared with a Chief Court. Letters Patent Appeals, for instance, were introduced and became numerous and the general result was that work was so greatly in arrears that in addition to the eighth Judge, two more temporary Additional Judges were appointed for a period of one year, with effect from 11th October 1921. These three additional Judges have been retained in the interests of work from that date and are still attached to the Court. In order to carry out the annual inspection of Subordinate Courts an additional Judge in excess of the staff referred to above has also throughout been attached to the Court annually for varying periods.

Courts of District and Sessions Judges.

99. Subordinate to the Chief Court were originally Courts of Divisional Judges. This was a characteristic of a non-Regulation Province (*para.*69). It disappeared on the introduction of the Punjab Courts Act, 1914, when the Civil Divisional system was abolished and the Courts of Divisional system was replaced by those of District and Sessions Judges. There was little practical difference between the new system (which prevails generally in India) and the old (which was curiously enough adopted by the United Provinces at the time of the change in the Punjab). The District and Sessions Judges exercise civil and criminal jurisdiction in a civil and sessions division comprising one or more districts. As District Judges these officers try most of the first appeals in civil suits, and as Sessions Judges they try sessions appeals from the orders of the District Magistrate and of First Class Magistrates.

Courts of Subordinate Judges.

100. Similarly the courts of Senior Subordinate Judges replaced those of District Judges. In these courts are heard appeals in minor civil suits from the subordinate courts of the district. Subordinate Judges are appointed to assist the District Judge, but up to the end of 1922 the majority of civil suits

were tried in the first instance by Munsifs posted either at district head-quarters or at outlying stations. Munsif were of three classes—the jurisdiction of a first class Munsif being limited to suits not exceeding Rs. 1,000 in value. The Assistants to the Deputy Commissioner were always invested with the powers of Munsifs and assisted to a certain extent in the disposal of civil suits, but the former practice of investisg Tahsildars with Munsif's powers is being gradually discontinued, with the increase in the number of Munsifs themselves. In 1922 the Punjab Courts (Amendment) Act of that year abolished the term Munsif and the work formerly done by Munsifs is now done by Subordinate Judges of the third and fourth grades. The system apart from this change in title remains the same. There are Small Cause Courts at Lahore, Amritsar, Delhi and Simla, and many Subordinate Judges are invested with the powers of such courts under Act IX of 1887. Honorary Civil Judges with powers of a Subordinate Judge are appointed from time to time and do useful work.

District Criminal Courts.

101. The Deputy Commissioner is the District Magistrate and controls all the subordinate criminal courts of the district. The District Magistrates and occasionally other Magistrates are invested, under section 30 of the Criminal Procedure Code, with power to try all offences not punishable with death, and to inflict sentences up to seven years' imprisonment. The District Magistrate hears appeals from the Magistrates of the second and third classes, but this power is shared with Additional District Magistrates who are appointed in certain districts. In the districts of Mianwali and Dera Ghazi Khan, and the Leiah tahsil of Muzaffargarh in which the Frontier Crimes Regulation is in force the Deputy Commissioner, on the finding of a Council of Elders (*jirga*), may pass sentence up to fourteen years. Sentences under the Frontier Crimes Regulation exceeding seven years require the confirmation of the Commissioner, who has revisional jurisdication in all cases. All the Assistants to the Deputy Commissioner are invested with magisterial powers, as are certain Subordinate Judges. Tahsildars usually exercise second class powers and Naib-Tahsildars powers of the third class. Considerable assistance is obtained from Honorary Magistrates who sit either singly or as a Bench under section 15 of the Code of Criminal Procedure.

Revenue Courts.

102. Special Revenue Courts to decide all suits regarding tenant rights, rents and divers cognate matters, in which civil courts have no jurisdiction, have been established under the Punjab Tenancy Act. Tahsildars and Naïb-Tahsildars are Assistant Collectors, 2nd grade, the Assistants to the Deputy Commissioners are Assistant Collectors, 1st grade, and the Deputy Commissioner is the Collector, all three classes of courts exercising original jurisdiction. Appeals from Assistant Collectors lie to the Collector, from him to the Commissioner, and from the Commissioner to the Financial Commissioner, who is the final court of appeal in revenue cases. A Revenue Court is simply a revenue officer acting in a judicial instead of in an executive capacity. The distinction between revenue and civil courts is one of agency, not of procedure. It is well that cases of this kind should be tried by officers whose daily work is concerned with the revenue, and brings them into close contact with the rural population, because the special experience so acquired conduces to a readier appreciation of the points at issue, and greater skill in obtaining and appraising the evidence. The procedure of revenue courts is governed by the Code of Civil Procedure. The idea that revenue litigation is less regular and more subject to the idiosyncracies of the Judge than civil litigation is quite erroneous.

The Legal Remembrancer.

103. The Administration of the legal affairs of the Punjab Government is in the hands of a Legal Remembrancer (who is also Secretary to Government in the Legislative Department), a Government Advocate, two Assistant Legal Remembrancers and one Public Prosecutor for the High Court at head-quarters and 26 District Public Prosecutors. With the exception of the Legal Remembrancer, these officers are free to take up private practice as far as is consistent with their official duties.

Jails.

104. On the first establishment of British rule in the Punjab the proper administration of the jails was retarded by many inevitable disadvantages. The accommodation consisted of old forts and buildings such as chance offered. The officers in charge were inexperienced in jail management and overburdened with a variety of other work. There was naturally a want of central control. Fatal epidemics appeared in various

stations and it was estimated that the mortality in jails averaged eight per cent. The Board of Administration of the Punjab was fully aware of the evils which they had inherited and in their report for the year 1849-50 wrote that "conscious that the past management has been unavoidably imperfect they will not shrink from pointing out existing evils and will also suggest the measures best calculated for their cure." From time to time the position was exhaustively examined by special commissions and legislation was based on their recommendations until in 1894, a Prisons Act for the whole of India secured uniformity, so far as possible, in the matter of jail rules and discipline.

Policy of concentration.

105. During 1849-51, 20 Jails were constructed. These jails accommodated nearly ten thousand prisoners. In 1920 there were in the Punjab as then constituted, that is, exclusive of the North-West Frontier and Delhi Provinces, 24 jails and 10 subsidiary jails which accommodated 14,700 prisoners. The policy which has been consistently pursued in recent years is that of concentration, district jails being used simply as collecting and forwarding institutions while the large central jails receive prisoners for long periods of detention. This policy has caused a great gain in efficiency and perhaps a reduction in cost.

The Punjab Jail Department.

106. The Punjab Jail Department dates from 1853 when an Inspector of Prisons was appointed. In 1858 the designation of Inspector of Prisons was changed to Inspector-General of Prisons. It was felt that medical officers were the most suitable persons for the posts of Superintendents of Jails and gradually Medical Superintendents were introduced into jails until in 1891 thirty-two out of thirty-three jails were in charge of medical officers.

Jail Guards.

107. The guards of jails were first furnished by the Military Preventive Police Infantry and later by the Civil Police. In 1868 the police guard was reduced and night watchmen were employed on a lower rate of pay. It was not until 1892 that a special warder establishment was recruited, but this was developed until at the present day there is in every jail a well-disciplined force of warders who, besides receiving good pay, are furnished with quarters for themselves and

their families and receive a free pass on the railway when proceeding on leave. In 1860 for the first time prisoners were used as warders under the title of "monitors", and this system has been successfully developed till in 1920, the number of convict officials employed in jails amounted to 1,600. Convict officials receive small monthly stipends in order to encourage good conduct.

Sanitary improvement.

108. The early Indian Jail system was insanitary, demoralising and non-deterrent. To-day it is sanitary, under strong discipline and reformative. In 1920 the number of sick prisoners in jails amounted to only 461 *per mille* while the number of deaths was reduced to 15·15 *per mille*. In 1850 the system was not even deterrent, in 1920 the prisoner is reformed by being educated, trained to a trade, and rewarded for good conduct. The ordinary prisoner is now trained in one or more of numerous industries ; the manufacture of carpets, blankets, soap, country paper, rope and munj-matting, litho-printing, pottery-making, brick-making, tent-making, carpentry, etc. He can rise to the responsible post of convict-warder ; he can obtain remission of sentence by good conduct; and he is paid a small salary for his services in jail.

Arrangements for Juveniles : Borstal treatment.

109. But it is in the case of juveniles that reformatory methods offer most prospect of success. It is interesting to note that the Board of Administration was fully alive to this duty. In 1853 juvenile prisoners under 16 years of age to the number of 110 were located in the Lahore Horticultural Society's garden, and in 1862 a juvenile prison and reformatory was opened in Sialkot where the youthful criminal was kept away from the contaminating influence of older prisoners. The idea of reform was never lost sight of, and was gradually developed. In 1904 a Reformatory School was opened at Delhi. This reduced the number of juveniles in jails. They were meantime being concentrated in Lahore until 1912 when the Lahore Borstal Institution was opened. In the Lahore Borstal Institution lads are taught ordinary trades ; their physique is developed by physical culture, and attention is paid to the formation of character. They are given a secular education by trained teachers and their religious education is supplied by priests of the various denominations. The Borstal Institution is

an example of the way in which the Government has worked out the principle that it is the duty of a civilised nation not to catch the youthful criminal, break his spirit by confinement and then discharge him as a dreadful example, but rather to train him, reform him, and eradicate his evil tendencies so that on release from jail he may become a respectable member of society. The Borstal system aims at the regimental spirit and the penal side is paraded as little as possible. There are four grades, the penal, the ordinary, the special and the star special. The impenitents are in the lowest grade and their lot is hard work, plain diet and solitary confinement. They have to be "broken in," otherwise they will drift back to jail after release. The bulk of the lads fall into the ordinary grade, a smaller number into the special grade and but a picked dozen into the star special grade. These last are the monitors, the drill sergeants (they wear a smart uniform and belt like those of a havildar in the Indian Army), the overseers of the Institutions. The lads play football and cricket, they are drilled in true regimental fashion, they have an excellent band. The slouching gait and hang dog expression of the jail-bird have disappeared ; instead one sees the smart swing of the soldier, and hears the ringing laugh of the school boy. In short, in defining the progress effected in jail administration since 1850 it may be claimed that reformation has, to a great extent, been substituted for punishment, and the jail converted into a species of moral hospital.

Present organization of Jail Department.

110. The Jail Department consists of an Inspector-General, three Superintendents of Central Jails at Lahore, Montgomery and Multan, and a Superintendent of the Borstal Institution and Female Jail at Lahore. District Jails are situated at the headquarters of 17 of the districts and are in the charge of Civil Surgeons, who receive an allowance for their jail duties. A Tubercular Jail is situated at Shahpur and is under the charge of a whole-time Medical Officer. At Khewra there is a Camp Jail under a Jailor-Superintendent. This Jail provides labour to the Khewra Salt Depôt. At the head-quarters of nine districts and at Rajanpur (Dera Ghazi Khan district) Subsidiary Jails have been established to receive and forward to their destination prisoners convicted in the district.

Registration.

111. Under the Indian Registration Act, 1908, Deputy Commissioners are *ex-officio* Registrars of titles for their districts, and Tahsildars Joint Sub-Registrars for their *tahsils*, but most of the registrations are performed by Departmental or Honorary Sub-Registrars who have no other official duties. General control is exercised by the Inspector-General of Registration, an appointment held by the Director of Land Records, who is also Registrar-General of Births, Deaths and Marriages under Act VI of 1886. The bulk of the instruments registered are documents relating to the sale, mortgage, or lease of immoveable property, the registration of which is compulsory by law.

CHAPTER V.

ADMINISTRATION: FINANCE.

Importance of Finance: The Sikh financial system.

112. The importance of the financial side of administration is often apt to be overlooked. Finance is indeed but a means to an end: good government. But it is a most essential means; and no Government has been able to perform its other functions efficiently when its financial machinery has got out of gear. The decline and fall of the Moghul as of the Roman Empire was characterised by ever-increasing financial difficulties. But Ranjit Singh's finance was as efficient as a purely empirical system could hope to be. Revenue was realized from all known sources of taxation, direct and indirect. Land, houses, persons, manufactures, imports and exports, alike contributed to the income of the *Khalsa* under Ranjit Singh. The outlying provinces, in which revenue could be levied only by a military force, were farmed out to men of wealth and influence, who exercised powers of life and death without interference from the courts of Lahore, so long as their remittance to the royal treasury was regularly made. The revenue from districts nearer Lahore and more completely under control was collected by local tax-gatherers, called *Kardars*, whose more important proceedings were liable to review by the ministers of the Maharaja. The salt revenue was realized by a sale of the monopoly. Under this system the country was, on the whole, wonderfully prosperous. Every Jat village sent recruits to the Sikh army, who remitted their savings to their houses; and many a heavily assessed village thus discharged half its land revenue from its military pay. There was a keen demand for manufactured goods, and commerce flourished despite the burden of taxation. From land revenue Ranjit Singh raised Rs. 165 lakhs, partly in cash and partly, or mostly, in kind. From excise he realised Rs. 2 lakhs. In the province generally, the system of realizing the land revenue partly in cash and partly in kind remained in force till 1847, and to a much later period in the Native States and great jagirs.

Financial system of the Punjab on annexation.

113. During the regency, however, from 1845 to 1849, summary revenue settlements were made; and on annexation the assessments thereby imposed were maintained as a temporary

measure, quinquennial settlements being made in tracts which had not been assessed. The customs and excise systems were also reformed, and in the year after annexation coin of British mintage replaced the old currency, Rs. 50 lakhs of which were withdrawn from circulation. The estimated revenue for 1849-50 was as follows: land revenue (including grazing tax, income from forests, gold-washing, iron mines, and rents of land), Rs. 152 lakhs; excise (on salt, liquors, and drugs), including stamps and canal water rate, 26 lakhs; tribute, 5 lakhs; post office, 3½ lakhs; and miscellaneous receipts 3½ lakhs—a total of 190 lakhs. After the Mutiny of 1857 the Delhi and Hissar Divisions were added to the Punjab, increasing its revenue by 66·2 lakhs.

Original centralisation of financial control in Government of India.

114. Like other provincial Governments, the Punjab was at first under the strict financial control of the Government of India. The control of the Government of India over revenue and expenditure is derived from the Acts of 1853 and 1858, which treated the revenues of India as one and applied them to the purposes of the Government of India as a whole. It is true that this provision was not so strictly construed as absolutely to prevent the appropriation of particular sources of income to specific objects, all-Indian or provincial. But it certainly had the effect of denying to provincial Governments any inherent legal rights to the revenues which they raised. It followed that all revenues originally went into the coffers of the central Government and that all but the most trifling expenditure had to be defrayed under its orders. From that primitive condition by gradual stages, evolved the system of "divided heads," an arrangement which, like many Indian institutions, had its basis in conditions peculiar to the country. From the necessities of their position the Government of India were responsible for the defence of the whole country; for certain great commercial departments, such as the railways and the post office; for the administration of certain areas for strategic reasons, such as the Frontier Province; for diplomatic business and relations with Native States; for the service of the debt; and for all audit and accounting. They had also assumed the liability for insuring the provinces against the one great catastrophe which from time to time threatens their financial stability in the shape of a failure of the rains and consequent famine. For these purposes the central Government took the receipts from the sources of

revenue, which it directly controlled and also certain other revenue, such as salt, customs and opium, of which the local origin was no guide to its true incidence. But these resources by no means sufficed for its needs, and the deficit had somehow to be made good. The system of divided heads was an attempt to do this, but in order to make it intelligible a brief retrospect is necessary.

Financial system up to 1861.

115. The commercial principles which underlay the Company's rule sufficiently explain the original decision that the central Government should keep full control of all revenues in their own hands, and though a complete reorganization of the finance of the country followed soon after the transfer of India to the Crown no innovation in this respect was for some time attempted. Provincial Governments had in other respects extensive powers, but they could incur no actual expenditure without the formal orders of the Government of India. Sir Richard Strachey (who was the real author of the changes that followed) wrote at the time "the distribution of the public income degenerated into something like a scramble, in which the most violent had the advantage, with very little attention to reason. As local economy brought no local advantage, the stimulus to avoid waste was reduced to a minimum, and as no local growth of the income led to local means of improvement, the interest in developing the public revenue was also brought down to the lowest level."

Evolution of the system of provincial settlements.

116. Lord Mayo's Government has the credit of the first attempt to make the provincial Governments responsible for the management of their own local finances. Each local Government was given a fixed grant for the upkeep of definite services, such as police, jails, education, and the medical services, with power, subject to certain conditions, to allocate it as seemed best, and also to provide for additional expenditure by the exercise of economy and if necessary by raising local taxes. All the residuary revenues the Government of India retained for its own needs. Experience of this initial step not only justified a further advance, but also pointed the direction which it should take. What was clearly wanted was to give local Governments an effective inducement to develop the revenues collected in their territories, to encourage economy, and

to ensure that all parts of the administration received a due share of the growing revenues to meet growing needs. It was recognized also that less interference by the Government of India in the details of provincial administration was desirable. The final effect of the important changes made in Lord Lytton's time was to delegate to local Governments the control of the expenditure upon all ordinary provincial services, and in place of the fixed grants previously given to hand over to them the whole or part of specified heads of revenue wherewith to meet such charges. Here for the first time we meet with a classification of revenue heads into Imperial, Provincial and Divided. The heads of revenue made over in whole, or in part, to provincial Governments were those which were thought to offer most prospect of development under careful provincial management—forests, excise, license-tax (now income-tax), stamps, registration, provincial rates, law and justice, public works, and education. But the difficulty of exactly adjusting means to needs remained: and as the revenue from the transferred heads was not ordinarily sufficient for provincial requirements, it was supplemented by a percentage of the important head of land revenue, which otherwise remained an all-India receipt. Settlements on these lines were made with the provinces for five years in 1882, and were revised in 1887, 1892 and 1897, not without controversy and some provincial discontent. The Punjab, for example, throughout its financial history bore traces of the makeshift character of its origin. The older provinces were firmly entrenched in rights from which it was difficult to displace them; and the provincial policy followed with regard to buildings and roads in the Punjab was largely due to the lack of sufficient funds for development. At these revisions no changes of principle were introduced. But the growing needs of the provinces were met by treating land revenue as one of the sources of income divided between the central and the provincial Governments, and further by supplementing the provincial revenues by means of fixed cash assignments (frequently referred to as 'doles') adjusted under the same head.

Settlements made quasi-permanent.

117. In the year 1904 we meet an important new departure—the introduction of the system of quasi-permanent settlements. Thenceforward the revenues assigned to a province were definitely fixed, and were not subject to alteration by

the central Government save in the case of extreme and general necessity, or unless experience proved that the assignment made was disproportionate to normal provincial needs. The object was "to give the local Governments a more independent position and a more substantial and enduring interest in the management of their resources than had previously been possible." Under the old system every now and then it happened that the Supreme Government were forced by financial stress to resume balances standing to the credit of the provinces when the settlement expired. This killed any motive for economy, as provincial Governments knew that if they economized in one direction in order to accumulate money for other needs their savings were imperilled, while their reduced standard of expenditure would certainly be taken as the basis for the next settlement. Improved financial conditions and a more liberal outlook combined to remove these difficulties. Local Governments could count on continuity of financial policy, and were able to reap the benefit of their own economies without being hurried into ill-considered proposals in order to raise their apparent standard of expenditure. But the Government of India were also gainers. Their relations with the Provincial Governments were smoothed by the cessation of the standing quinquennial controversies, and they were also left in a better position to calculate their own resources.

Famine expenditure.

118. A little later on the provinces gained still further. Hitherto, the liability for famine had lain upon them, and the central Government stepped in only when their resources were exhausted. There was devised instead a new famine insurance scheme, by which the Government of India placed a fixed amount to the credit of each province exposed to famine. On which it could draw in case of famine without trenching on its normal resources. When this fund was exhausted further expenditure would be shared equally by the central and provincial Governments, and in the last resort the Government of India would give the province further assistance from their own revenues. In 1917 this arrangement was simplified by making famine relief expenditure a divided head, the outlay being borne by the central and provincial Governments in the proportion of three to one, which coincided approximately with the actual incidence under the previous system.

Rapid expansion in the Punjab. Inadequate financial resources.

119. The Punjab however was still at a disadvantage. The resources of the province had been greatly depleted by the formation of new districts and by the demands of the colony administration, of the police reorganization, of agriculture, and of education, and it became necessary to institute a period of retrenchment and to insist on punctual realization of the land revenue demand in the collection of which the previous years of scarcity had encouraged some laxity. More efficient control of the provincial finances resulted from the appointment of a Financial Secretary to Government, which, with the addition of a 2nd Financial Commissioner, became possible on the reduction in 1910 of the appointments of the Settlement and Excise Commissioners. In 1911 modifications were introduced in the provincial settlement by which were abolished many of the fixed assignments granted by the Government of India since the last settlement to cover the cost of administrative changes subsequently ordered, and in their place an increased proportion of certain shared heads of revenue was allotted to the province. By this change, after three years of argument, the objection that these expanding charges could not fairly be met by a fixed income was accepted and some illiberality in the original settlement itself was recognised and removed.

Settlements made permanent.

120. The Decentralization Commission went into the whole question of the financial relations of the central and the provincial Governments and proposed no radical change; but Lord Hardinge's Government decided to take the final step in the development of the system, and in 1912 they made the settlements permanent. They further improved the position by reducing the fixed assignments and increasing the provincial share of growing revenues. They also conferred a minor, but still important, benefit on the provinces by curtailing their intervention in the preparation of provincial budgets.

The Reforms Scheme: Abolition of 'Divided Heads'.

121. This state of affairs passed away as a result of the changes introduced by the Montagu-Chelmsford Reforms. The authors of the Reforms had urged the necessity of complete separation between the finances of the central Government and those of the various provincial Governments. Their main recommendations were that no head of revenue

should continue to be divided, and that Land Revenue, Irrigation, Excise and Judicial Stamps should be completely provincialised. General Stamps were added by a committee appointed in January 1920, leaving Income-tax only for the Government of India. In order to give the provinces a slight interest in the collection of this tax also, they were entitled to 3 pies on each rupee of the increase in the assessable income over and above the income taxed in 1920-21. The amount so obtained however is trifling, only Rs. 2¼ lakhs being budgetted under this head in the Punjab in 1922-23. Responsibility for famine insurance is also thrown on the provinces. The Punjab, however, being well protected by its great irrigation works is only subject to an annual charge of Rs. 3¾ lakhs as against the Rs. 63½ lakhs due from Bombay. Finally, the provinces were given complete freedom to draw on their balances, the accumulated savings of ten years. The Punjab balance of Rs. 139 lakhs has however been converted in only one year into a deficit of 90 lakhs.

The provincial contribution.

122. Under this rearrangement, however, the Government of India would lose heavily. It has therefore been necessary to get contributions from the provinces, and here the difficulties began. It has been arranged that the ultimate contributions from the provinces should be roughly in proportion to their wealth, and so while Bengal will pay 19 per cent. of the total provincial contributions, the Punjab will be only liable for 9 per cent. But in view of the difficulty to a province like Bengal of immediately adjusting her finances, this scale is only made an ultimate goal, the immediate charges being proportioned to the estimated relative burdens under the old system. Thus while the Punjab is now charged Rs. 175 lakhs, Bengal was only assessed at Rs. 63 lakhs and even this sum has been remitted for three years.

Advantages to Punjab from new arrangement.

123. Whatever may be its effect on provinces containing large commercial centres, a predominantly agricultural province such as the Punjab is undoubtedly the gainer under the new system. Taking the figures for 1921-22 for purposes of comparison, she gains on Land Revenue Rs. 119 lakhs, Stamps Rs. 41 lakhs, Excise Rs. 58 lakhs, Irrigation (Major Works) Rs. 243 lakhs, in all a gain of Rs. 461 lakhs. Against this must be set the loss of income-tax Rs. 23 lakhs and of doles (*para.* 126) Rs. 50 lakhs, together with extra expenditure on irrigation Rs. 73 lakhs,

interest on loans raised by Government of India previously for irrigation works Rs. 37 lakhs ; other small items of expenditure Rs. 44 lakhs ; contribution to Government of India Rs. 175 lakhs ; in all Rs. 402 lakhs. Thus the net gain to the Punjab is Rs. 59 lakhs a year. To this another Rs. 24 lakhs would have been added had Excise revenue kept up to its previous level.

Financial difficulties of the Punjab Government.

124. But the Punjab started her administration with a financial handicap from which she has never completely recovered. A non-regulation province (*para.*69), the appendage of an appendage of the Bengal Presidency she was from the first given only sufficient to carry on. Clamour extorted piecemeal concessions from the Government of India, but the financial situation was never reviewed as a whole till the Reforms Scheme came into force. A wealthy province like Bengal, which, owing to her Permanent Settlement, was relatively lightly taxed, had, nevertheless, a far more highly developed administrative system than the Punjab. Nor was this all. The opening up of the Canal Colonies (*para.*320) placed the Punjab somewhat in the position of a new colony relative to the older and more thickly populated provinces. But while the development of Canada or Australia has been stimulated by large loans from the English money-market, the Punjab gets no advances for development, except the actual loans advanced for railways and canals. The Kasur and Sirsa Sub-Divisions, which should have been raised to the status of districts if they were to be effectively administered, have maintained their makeshift arrangements to this day. In the zeal for economy even *tahsils* were reduced in number, often, as in the case of the elimination of the Sampla tahsil of the Rohtak District, to the great inconvenience of the district administration. Necessary roads could not be made, and buildings were neither artistic nor convenient.

Hand-to-mouth policy.

125. Under these conditions the financial policy of the Punjab, subjected as it was to the strict control of the Government of India, bore throughout the hand-to-mouth characteristics of its inception. Long views were impossible. It was difficult enough to make both ends meet. These difficulties were aggravated during the war, when a parsimonious policy was both necessary and justifiable. But as a result the Reforms Scheme found the Punjab with schemes of administrative

PUNJAB GOVERNMENT

TOTAL REVENUE AND EXPENDITURE.

1. Opening balances are excluded.
2. Amounts for 1921-22 shew results under the old system of accounting.
3. —
   (1) Before the war revenue and expenditure balanced roughly, both being small.
   (2) During the war revenue exceeded expenditure.
   (3) Since the war expenditure has exceeded revenue, both being large.
4. Figures of 1921-22 are given as they would have been under pre-Reforms system.

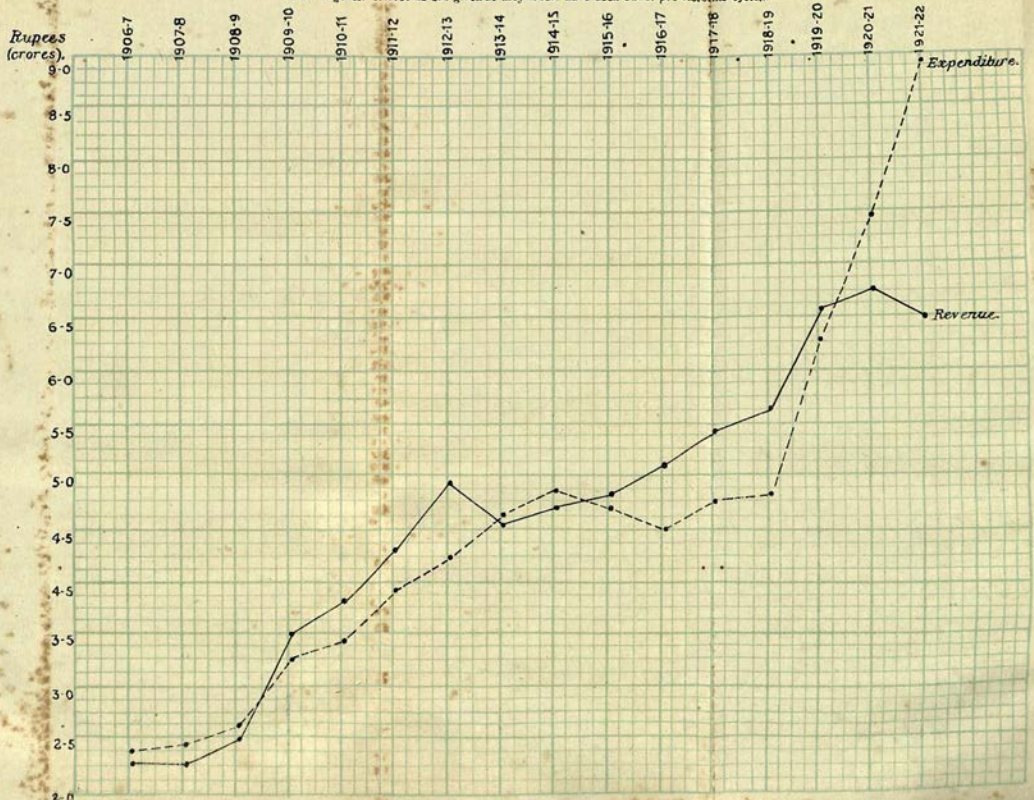

Fig 3.

PUNJAB GOVERNMENT.

MAIN HEADS OF REVENUE OF 1906-07 TO 1921-22.

NOTE.—1. Land revenue oscillates violently about a stationary quantity. It does not increase with agricultural wealth of province and the diminished purchasing power of the rupee.

2. Large and continuous growth of irrigation receipts. Irrigation indirect receipts are made up of the portion of land revenue due to irrigation *less* additional cost of administration.

3. Continuous increase of Excise receipts till temperance policy of 1920-21.

4. Stamp receipts are stationary. They have not increased in proportion to wealth of province and diminished purchasing power of rupee.

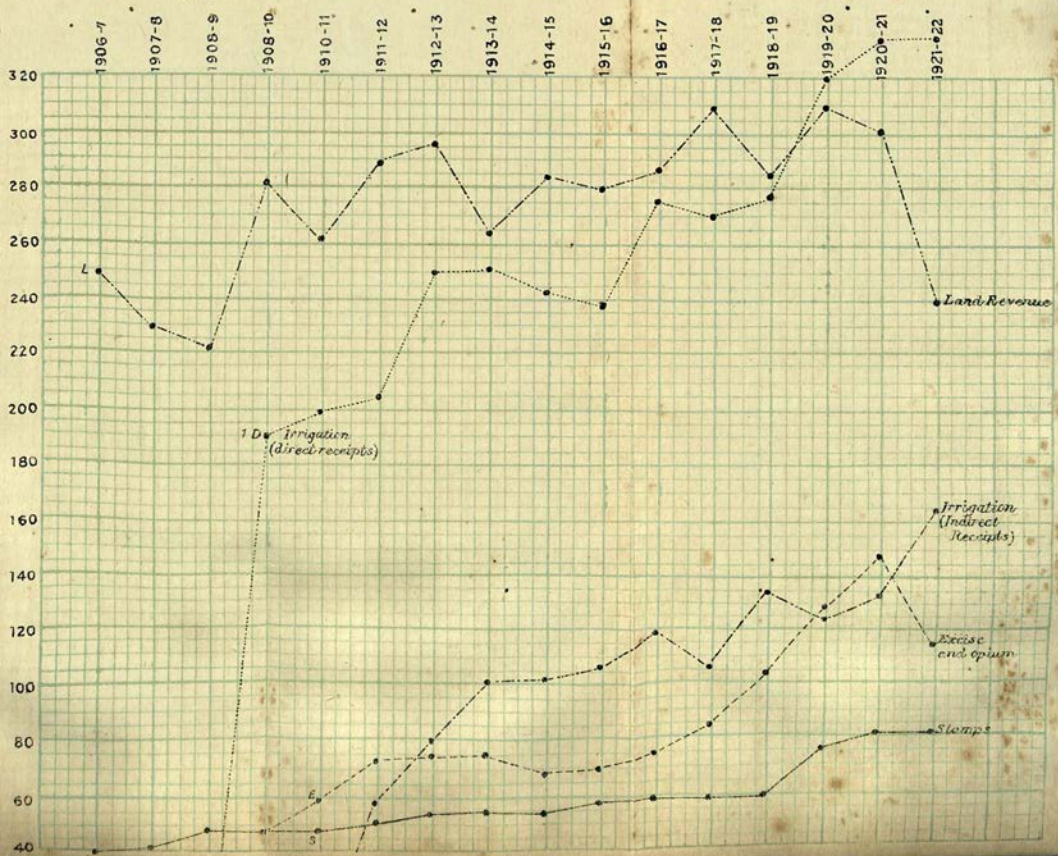

Fig 4

PUNJAB GOVERNMENT.

MAIN HEADS OF EXPENDITURE I.

NOTE.—1. Slight decrease of expenditure during war and subsequent increase.

2. Civil Works expenditure is included in list of the Department (*e. g.*, Medical and Sanitary) for which the works were executed.

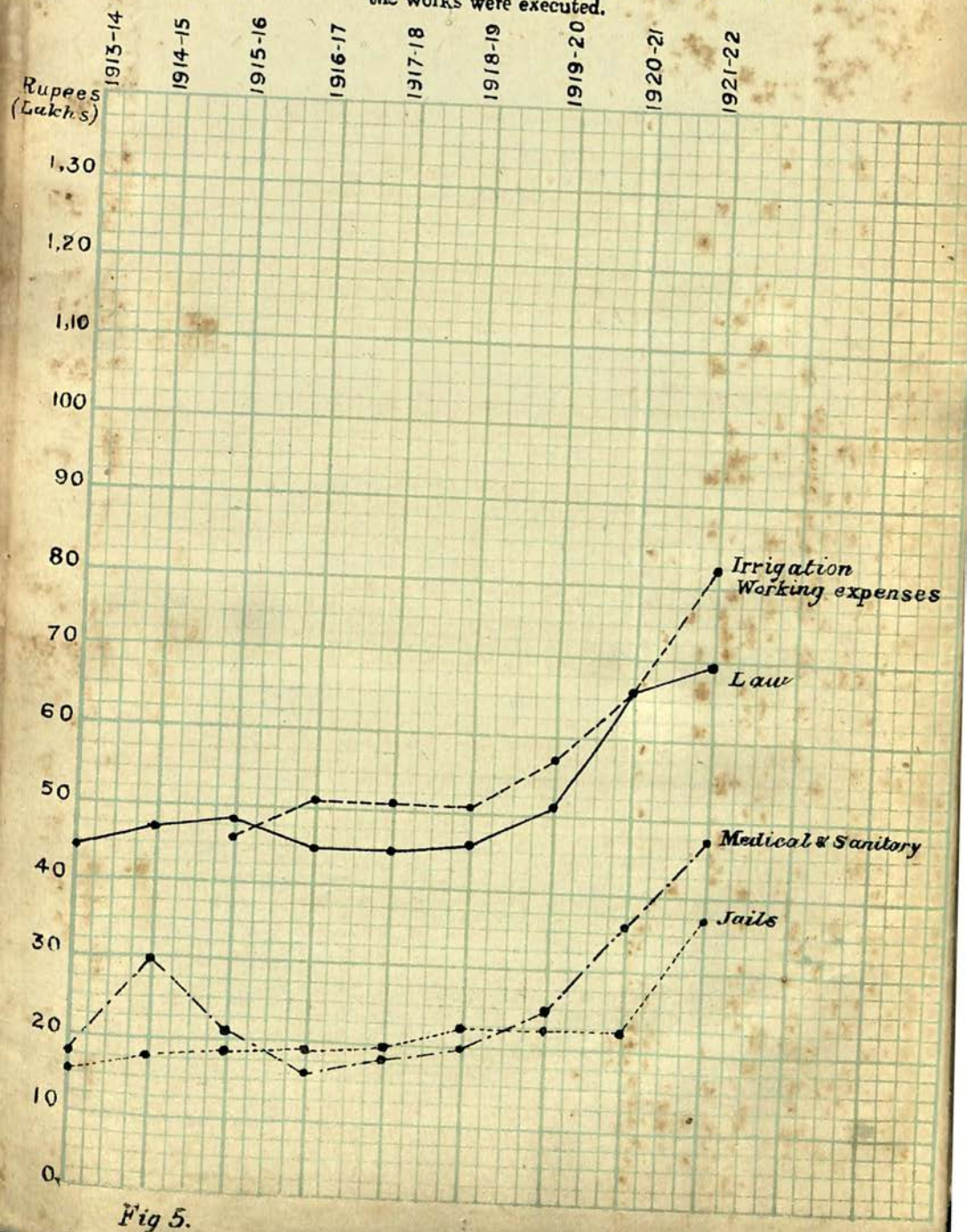

Fig 5.

and economic improvement long overdue. The Reforms Scheme had given the Punjab financial freedom. But the pecuniary advantages obtained were exhausted in the cost of an expensive democratic machinery, and a heavy increase in expenditure due to the rise in prices, combined with an inelastic revenue. As previously, therefore, the province must perforce satisfy immediate financial necessities rather than aim at the permanent economic benefit of the province.

These points are illustrated by the graph (Revenue and Expenditure of the Punjab Government) (*fig.* 3).

Land Revenue: Fluctuations round a stationary norm.

126. The main heads of provincial revenue are shewn in the graph (*fig.* 4). Of these Land Revenue is the most continuously important. It will be noticed that though, owing to seasonal variations, it is subject to considerable fluctuations, there has been no appreciable average increase. It should, however, be remembered that the portion of land revenue due to irrigation is shewn separately as Irrigation (indirect receipts). This consists of the estimated extra land revenue resulting from canal irrigation, after deducting the additional expenditure of administration. In a district like Lyallpur, which was developed from a sandy waste, it is practically the whole land revenue *less* the whole cost of administration. But even when allowance is made for this, land revenue receipts bear no correspondence to the increase of agricultural wealth (excluding irrigated tracts) and prices. The fluctuations in land revenue receipts are, moreover, a continual source of embarrassment in provincial accounts. To eliminate them some form of insurance seems advisable on the line of famine insurance.

Irrigation Revenue: Its profitable nature.

127. The rise in irrigation receipts, both direct and indirect (*para.* 126), is a sufficient tribute to the profitable nature of Irrigation as an investment. From these working expenses (*fig.* 5) should be deducted. Here, as under the old system of accounts, they were shewn as expenditure, but now they are deducted from Irrigation receipts. When from this is deducted the interest on the capital invested (which was previously advanced by the Government of India) net profit from the canals is arrived at. This amounted to Rs. 223 lakhs in 1921-22, and the estimates for 1922-23 are Rs. 270 lakhs. It is difficult to represent this graphically for preceding years owing to the unbusinesslike

method of accounting which obtained before the Reforms. The graphs on *fig.* 4 however sufficiently indicate the great increase in Irrigation receipts. Working expenses and interest taken together roughly amount to the indirect receipts so that the direct receipts give a rough estimate of the net profit due to Irrigation.

Potential advantages from expenditure on deve'opment.

128. The profits realized from Irrigation give some indication of the advantages which accrue to an economically virgin country from the scientific development of its resources. This is absolute profit, after deducting the interest on the loans raised. Put into another form the Lower Chenab Canal is paying 45 per cent. on the Rs. 3¼ crores invested in it, the Lower Jhelum 19 per cent. on Rs 1·7 crores, the Upper Bari Doab 16 per cent. on Rs. 2¼ crores and the Sirhind 11½ per cent. on Rs. 2½ crores. It would be difficult to find such a profitable investment elsewhere. This of course leaves out of count the other revenue that Government derives from the Canal Colonies, all ultimately due to the Irrigation Department. And the direct receipts to Government are but a fraction of the total increase of wealth to the people of the Punjab. The Forest Department has been only prevented from showing similar results by the necessity of meeting all capital expenditure from revenue. With a similar capital grant the vast timber estates of the Punjab should realise a profit not less than its canals. The whole question is now being carefully considered. Apart from forest development the Punjab Government have under contemplation Irrigation and hydro-electric projects. The total expenditure involved will be about Rs. 47 crores in the next 20 years, the average annual amount required from loans being Rs. 3 crores per annum during the next five years. Considering the remunerative nature of the projects there should be no difficulty in financing these loans at a reasonable rate of interest.

Financial difficulties in obtaining funds for Development and Scientific services: Roads; and Agriculture.

129. As has been already remarked (*para.* 125) expenditure fell slightly during the War, and rose rapidly afterwards owing to the rise in prices and the cost of a democratic administration. As the graphs indicate (*figs.* 5, 6) this applies generally to all heads of expenditure except Communications. Though not directly remunerative roads are necessary for agriculture and

PUNJAB GOVERNMENT-II

MAIN HEADS OF EXPENDITURE.

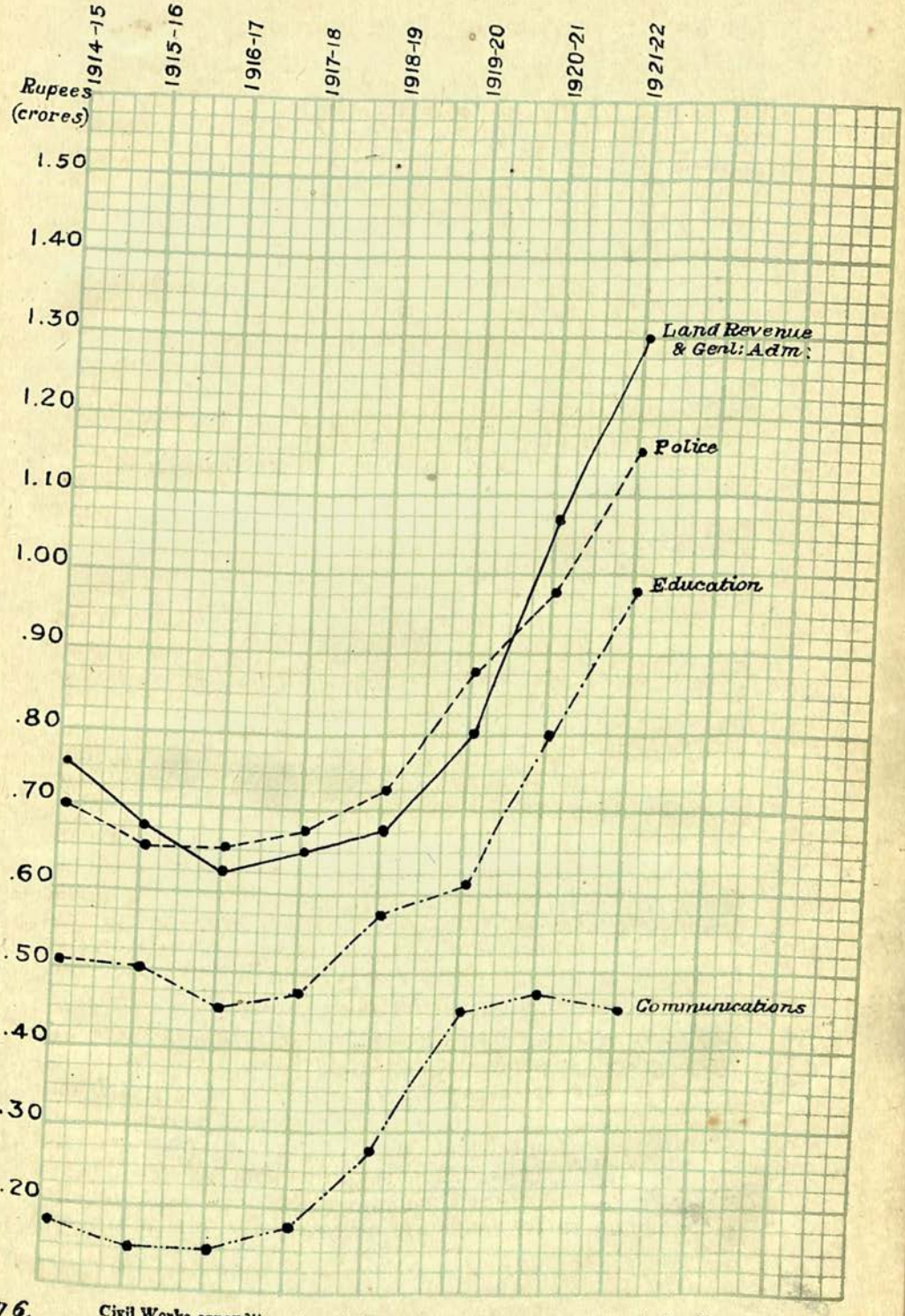

Fig 6. Civil Works expenditure (*i.e.*, buildings, etc.) is included in that of the Department (*e.g.*, Education) for which the works were executed, or under Communications.

Note the slight fall in expenditure during the war, with the subsequent rapid rise; also the small and stationary expenditure on Communications.

commerce and thus increase the taxable capacity of the people, and it is an unfortunate result of the financial stringency of the Province that it should be necessary to economise on this important head of expenditure. Though educational expenditure has risen rapidly, funds have not been available for scientific research to anything like the extent demanded by the Scientific Departments. The Agricultural Department, for example, has continuously emphasised the necessity of verifying scientifically the value of new agricultural methods before attempting to popularise them by educational or other means.

Stamp revenue.

130. As will be seen (*fig.* 4) the increase from Stamps has not expanded with the increase in the wealth of the province and the price level. In November 1922 however Stamp duties and Court-fees were enhanced (the latter a tax which will hit only the litigious who can well afford to pay). The Stamp revenue is derived from two great classes of stamps—(1) judicial or court-fee stamps and (2) non-judicial or revenue stamps. Judicial or court-fee stamps are provided for by the Court-fees Act, 1870, and non-judicial stamps by the Indian Stamp Act, 1899. Both these Acts have been amended from time to time by subsequent legislation. Two kinds of stamps—adhesive and impressed—are used to denote the payment of duty on instruments. Impressed stamps are again of two classes, namely, impressed sheets, the paper bearing the impression of stamps of varying values engraved thereon, and impressed labels which are affixed to instruments by Government officers empowered to do so. Every Government treasury is a local depôt for the sale of stamps, judicial and non-judicial, to the public, and of postage stamps to postmasters. Similarly, sub-treasuries are branch depôts. All treasurers are *ex-officio* vendors of stamped paper to the public. They are entrusted with stocks of stamps, and are required to meet the detailed demands for stamps made by the public, indenting upon the main stock of the local depôt when their own runs low.

Excise revenue: Policy of Government.

131. The revenue from Excise expanded rapidly with rising prices till 1920-21 when there was a sudden fall (*fig.* 4). This is to be attributed to the increased anxiety on the part of the reformed Government lest undue encouragement

should be given to liquor consumption. Revenue from Excise must be placed in a special category inasmuch as an increased Excise Revenue is not regarded as desirable unless it coincides with decreased consumption of alcohol. The general excise policy of the Government of India in relation to liquors is very clearly defined. They have no desire to interfere with the habits of those who use alcohol in moderation ; this is regarded by them as outside the duty of the Government, and it is necessary in their opinion to make due provision for the needs of such persons. Their settled policy however is to minimise temptation to those who do not drink, and to discourage excess among those who do; and to the furtherance of this policy all considerations of revenue must be absolutely subordinated. Now however that Excise has become a purely provincial receipt the provinces are freer to put their own interpretation on this policy. The Committee of the Legislative Council of the United Provinces appointed to examine the excise problem in all its aspects recommended that " the Government's excise policy should be to secure the minimum of consumption but that the proportion of profits from that minimum of consumption which is to accrue to the State should be so large as possible." This policy has also been adopted in the Punjab. There is reason to believe that the minimum liquor consumption that can be achieved by raising the duty has now been reached and that a further rise would merely lead to increased illicit distillation and smuggling.

History of the Excise Administration.

132. Prior to annexation the only spirit made in the Punjab was an uncoloured rum from sugar, and this is still the chief alcoholic drink of the people. To control its production, in 1863 no less than 118 state distilleries were established at District and *Tahsil* headquarters. Each of these was an enclosure in which private distillers were permitted to set up stills, the spirit manufactured being kept in store by the excise officials and issued by them, after payment of the duty, to retail vendors. This system has now been abolished and replaced by six private licensed distilleries—at Sujanpur, Amritsar, Rawalpindi, Karnal, Solon and Simla. The latter chiefly distils whisky from barley malt. The other five distil uncoloured rum for the majority of the population.

Excise Administration Staff.

133. The immediate responsibility for the excise arrangements of each district has always rested with the Deputy Commissioner, super-

vised by the Commissioner of the Division, general control being exercised by the Financial Commissioner. In 1888 the growing importance of excise revenue and the necessity for specialised supervision led to the appointment of a Commissioner of Excise. In 1910, most of the recommendations of the Excise Committee of 1906 having been carried into effect the post was abolished. The preventive establishment attached to a district consists of an Inspector, with one or more Sub-Inspectors and a peon for each. An Assistant or Extra Assistant Commissioner is usually placed in special sharge of the district administration as an Excise Officer.

Distilleries and Breweries.

134. The staple spirit of the Province " white rum," made from sugar or molasses, is manufactured in the licensed distilleries at Amritsar, Rawalpindi, Karnal, Sujanpur (Gurdaspur) and Solon (Simla Hills), which are private enterprises. The staff posted at each distillery to arrange for the levy of still-head duty and to safeguard the interests of Government consists of an Inspector and one or more Sub-Inspectors. This staff is supervised by an Excise Superintendent. A separate Distillery Expert to advise in more technical matters was appointed in the Punjab in December 1920. Beer is brewed after European methods in licensed breweries at Simla, Solon, Kasauli, Ghora Gali (Murree Hills), Rawalpindi and Dalhousie. Duty is levied on the quantity manufactured. Imported liquor, including beer imported or brewed after the European method, is sold under wholesale and retail licenses, the fees for which are fixed, except where the retail sale is likely to compete with that of country spirit shops, in which case the license is sold by auction or tender. Licenses for wholesale vend of country spirit are issued on fixed fees, while those for retail vend are sold to the highest bidder by auction or tender.

Opium and other drugs.

135. Poppy cultivation for the production of opium is allowed only in the Simla District and the Kulu Sub-Division of the Kangra District. The bulk of the opium consumed in the Punjab is manufactured at the Government factory at Ghazipur, and is generally known as Excise opium. The only other licit sources of supply are imports from the Hill States under the political control of the Punjab Government and from Afghanistan. Opium produced in Kulu and Simla is subject to export and transport duties and in the case of Simla

opium a transport duty is also levied at the Kot Khai warehouse. Opium imported from Hill States pays import duty in the district of import, and imports from Afghanistan in the North-West Frontier Province. For the supply of these varieties to retail vendors wholesale licenses are issued, for which fixed fees are charged. Excise opium is issued from the Government Treasuries direct to retail vendors on payment of a price, part of which represents cost of production and the remainder the duty. Licenses for retail vend are sold by auction. *Charas* and *bhang* are drugs of less importance. *Charas* is imported from Yarkand to the warehouses at Sultanpur (Kangra), Hoshiarpur and Rawalpindi, and pays duty on issue. The hemp plant grows wild in the southern Himalayan districts, and its cultivation for the production of *bhang* is prohibited throughout the province except under license in Dera Ghazi Khan, where an acreage duty is charged. An import duty and a duty on transport from one district to another are also imposed. Licenses for wholesale and retail vend of *charas* and *bhang* are issued, the former on fixed fees and the latter by auction.

Accounts.

136. The accounts of the Provincial, Civil and Public Works Departments are audited by the Accountant-General, Punjab, who is assisted by two Deputy and six Assistant Accountants-General and three Assistant Accounts Officers. Under the Reforms the audit of Local Fund Accounts is a Provincial subject, but at the request of the Punjab Government it has been undertaken by the Auditor-General on their behalf. There is a special establishment for auditing Local Fund Accounts under the supervision of an Examiner.

Currency and Resources: Government Cash balances.

137. The control of the Currency and Resource operations of the province is exercised by the Deputy Controller of the Currency, Northern India, with head-quarters at Delhi. The Government Cash balances are kept in Government treasuries at the headquarters of districts in charge of the Deputy Commissioners, assisted by officers of the Provincial Civil Service styled Treasury Officers ; and at sub-treasuries (which are subordinate branches of the treasury at head-quarters), located at each *tahsil* headquarters in charge of Tahsildars who act as sub-treasury officers. At places where there are branches of the Imperial Bank of India (*viz.*, Lahore, Simla, Ambala, Multan, Lyallpur, Amritsar and Rawalpindi), all Government receipts

are paid into and all Government disbursements are made from the Bank, which is responsible for the provision of funds at these places.

Paper Currency

138. For the management of the Paper Currency a Currency Office of issue is established at Lahore, with currency chests at the head-quarters of each district and sub-currency chests at the head-quarters of most of the *tahsils*. At places where there are branches of the Imperial Bank of India (other than Lahore where there is a Currency Office), a portion of the currency chest balance is kept in the sole custody of the Agent of the Bank for the purpose of facilitating exchanges with the public. At other places the ordinary exchanges with the public are made from the cash balance held in the treasury, which is replenished from the local currency chest as necessity arises.

Arrangements for money transfers.

139. The Deputy Controller of the Currency keeps the treasuries adequately supplied with all kinds of coin and currency notes, sees that the balances at the treasuries are maintained at a proper figure, arranges for the transfer of funds between treasuries and the Imperial Bank of India and for the remittance of notes and coin between treasuries and the Currency Office.

Treasury Officers are similarly responsible for keeping their treasury and sub-treasury balances as low as is compatible with the requirements for current expenditure. The transfer of funds between treasuries and sub-treasuries and branches of the Imperial Bank of India is effected through the medium of the District and sub-currency chests.

Government gives facilities to the public for the transfer of money to and from places where there are Government treasuries. Under its agreement with the Government of India, the Imperial Bank of India gives every facility for the transfer of money between places where it has branches at fixed rates. The facilities for the transfer of money given by Government are limited to the transfers to and from treasuries where there is no branch of the Imperial Bank of India. Such transfers are effected by means of currency telegraphic transfers and supply bills, at fixed rates which are ascertainable at any Government treasury.

CHAPTER VI.

LEGISLATING AUTHORITY.

Indigenous legal systems. Hindu and Muhammadan Law. Punjab Agricultural Custom.

140. The indigenous law of India is a law of status, derived in the case of Hindus from the Shastras and in that of Muhammadans from the Quran. In the Punjab, however, these legal systems only apply strictly to the urban classes. The rural classes follow an agricultural custom, which, though subject to considerable variations, has yet certain underlying principles (*e.g.*, the agnatic rule of inheritance which, however, is considerably modified by the principle of maintenance according to which broadly speaking no helpless dependent is left unprovided for). This custom has to a large extent been judicially determined (*para.* 96). Reference is, however, often made to the records of custom (*riwaj-i-am*) drawn up by Settlement Officers at Settlement ; Punjab custom, unlike that of England, being progressive, and the Land Revenue Settlements forming a convenient opportunity for recording changes that have occurred.

Punjab Laws Act.

141. From the first, however, the necessity was felt for some powers of original legislation. Lord North's Regulating Act in 1773 gave the Governor-General in Council the power to make Regulations subject to the control of Home authorities. These Regulations applied to " all such provinces as may at any time hereafter be annexed to Bengal." The Punjab was never specifically so annexed, and was therefore called a Non-Regulation Province (*para.* 69). Doubt arose therefore as to the validity of the Punjab Civil Code ; the various administrative rules and orders that had been issued by the Punjab Government, and the Bengal Regulations themselves (whose applicability to the Punjab was dubious). To remove this the Punjab Laws Act (Act IV of 1872 amended by Act XII of 1878) was passed, in which all previous legal provisions were consolidated and re-enacted.

Authority for Frontier Regulations.

142. In order to provide a still more elastic and adaptable method of making rules, which have legal validity for provinces in an elementary stage of progress, the Act 33, Vict., cap. 3 (1870), provided that certain territories may at any time be declared by the Secretary of State to be territories for which it is

desirable that special Regulations (other than the Acts of the Legislature) should be made. The districts so declared become 'Schedule' whenever such declaration is made, so that there is in fact a power of creating new scheduled districts in addition to those in that Act. The Act has now been superseded and the authority is now 5 and 6 Geo. V, ch. 61, (Government of India Act, 1915), Sec. 71. The tracts in the Punjab, for which regulations have been made in accordance with this Statute, are now the districts of Mianwali and Dera Ghazi Khan, the tahsil of Leiah in Muzaffargarh and the *pargana* of Spiti in the Kulu sub-division of Kangra.* The procedure laid down by this Statute assigns the initiative in such legislation to the Governor, who proposes to the Governor-General in Council the draft of each Regulation with the reasons for proposing the same. When the draft has received the assent of the Governor-General in Council and has been published in the Gazettes it has the like force of law as if it had been made by the Legislature of the Government of India. The present Frontier Crimes Regulation* (III of 1901), which is in force in the above tracts, Spiti excepted, replaced a similar Regulation of 1887 and embodied all the amendments suggested by fourteen years' experience of its administration. The Frontier Murderous Outrages Regulation (IV of 1901) also applies to the same tracts. For Spiti there is a special Regulation, issued in 1873.

The Indian Councils Act of 1861.

143. Meanwhile the growing legislative confusion in the Government of India had been dissolved by the Indian Act of 1861. The three separate presidencies were brought into a common system; the legislative and administrative authority of the Governor-General in Council was asserted over all the provinces and extended to all their inhabitants; and the principle of recognising local needs and welcoming local knowledge was admitted, so that local councils were created and a few non-official and even Indian members introduced for the purposes of advice. But, partly at least out of anxiety to prevent the authority of the executive from being impaired (as in Warren Hastings' days) by any other rival institution without administrative responsibility, it

* The Frontier Crimes Regulations were made applicable to Mianwali by Punjab Notification No. 23 of 23rd October 1901; as regards Dera Ghazi Khan the Regulation (III of 1901) made it applicable. By Punjab Notification No. 534 of 3rd December 1907 the Bengal Eastern Frontier Regulation of 1873 was extended to Spiti.

was expressly declared that the councils were a mere legislative committee of the Government and not the germ of responsible institutions.

Punjab Legislative Council of 1897.

144. By this Act the Governor-General was directed to establish a legislative council for Bengal and empowered to establish similar councils for the North-Western Provinces and for the Punjab. Under this Statute a Council of nine nominated members was created in the Punjab from 1st May 1897. The powers of the Punjab Council so constituted were purely legislative and were exercised subject to the control of the Governor-General in Council, to whom all Bills included under the provisions of Section 43 of the Indian Councils Act, 1861, or containing penal clauses, were submitted for previous sanction, and to whom also every project of law was forwarded for transmission to the Secretary of State before it was introduced into Council. Before any measure carried through the Council could become law, it required the assent of the Lieutenant-Governor and of the Governor-General in Council. No rules nor regulations were made under the Statute 55 and 56 Vic., cap. 14 of 1892, (which amended the Indian Councils Act of 1861) authorising the discussion in Council of the Annual Financial Statement of the Local Government and the asking of questions on matters of public interest. Such rules and regulations had been made in other Provinces. They provided for the nomination of non-official members on the recommendation of public associations, municipal and other bodies.

Morley - Minto Councils of 1909.

145. The spread of the Congress movement in India, however, influenced the British Liberal Government of 1905 in favour of a further advance. The problem which Lord Morley and Lord Minto set themselves to solve was how to fuse in one single government the two elements which they discerned in the origins of British power in India. They hoped to blend the principle of autocracy derived from Moghul emperors and Hindu kings with the principle of constitutionalism derived from the British Crown and Parliament ; to create a constitutional autocracy, which differing *toto coelo* from Asiatic despotisms, should bind itself to govern by rule, should call to its councils representatives

of all interests which were capable of being represented and should merely reserve to itself in the form of a narrow majority predominant and absolute power. They hoped to create a constitution about which conservative opinion would crystalize and offer substantial opposition to any further change. They anticipated that the aristocratic element in society and the moderate men, for whom there was then no place in Indian politics, would range themselves on the side of the Government, and oppose any further shifting of the balance of power and any attempt to democratize Indian institutions.

The Punjab Morley-Minto Councils of 1909.

146. At the close of 1909 the first Punjab Council came to an end, and a Morley-Minto Council came into being. It consisted of 24 members, 5 elected and 19 nominated. Not more than 10 nominated members might be officials, and in addition two expert members might be nominated. These did not include the Lieutenant-Governor, who was *ex-officio* President. The five elected members were elected (1) one by the Punjab University, (2) three by municipal and cantonment committees, arranged in the Cis-Sutlej, the Central and Western groups, (3) one by the Punjab Chamber of Commerce. A Vice-President was appointed and the non-official members had the privilege of electing from among their number a representative to serve on the Imperial Council. In 1912 the constitution of the Council was altered, three members elected by District Boards being substituted for three nominated members.

Powers of the Morley-Minto Council.

147. The legislative powers of the new Council were exercised in the manner already described in the case of the old Council. The changes made, however, involved a very considerable enlargement of the Council, the introduction for the first time of a system of election of members, and the creation of a non-official majority. At the same time the rules regulating the procedure of the Council were so modified as to give it very much wider opportunities of expressing its opinion on administrative matters. Questions might be asked and resolutions moved on matters of public interest. Three non-official members sat on the Finance Committee, and in the discussions on the Budget members were enabled to take a real and active part in shaping the financial proposals of the year.

The Montagu-Chelmsford Reforms: Powers of the Legislative Council.

148. The Morley-Minto Council worked well in the Punjab. In other provinces, however, results were less satisfactory. It was feared that lack of the sense of responsibility would render the non-official members purely destructive critics. Accordingly the Montagu-Chelmsford Reforms bestowed responsible government on the provinces. Under the Government of India Act of 1919 the Governor's Legislative Council is to continue for three years from its first meeting subject to certain reservations. The Governor shall not be a President of the Legislative Council although he shall be able when necessary to address the Council. The President shall be appointed for a period of four years by the Governor. The Deputy President shall be elected from the very beginning and so shall every subsequent President. The estimated annual expenditure and revenue of the provinces shall be laid in the form of a statement before the Council in each year and the proposals of the local Governments except as regards a few specified heads, for the appropriation of moneys are to be submitted to the vote of the Council in the form of demands for grants. The Local Government, however, is empowered to act, in relation to a demand which concerns a reserved subject, as if it had been assented to; if the expenditure in question is necessary for the discharge of its responsibilities.

The Governor's powers of control.

149. Where a Bill has been passed by a local Legislative Council the Head of the Province may, if he considers it desirable to assent to it, do so; or if he wishes to withhold his assent, he may return the Bill to the Council for reconsideration either in whole or in part, together with any amendment which he may recommend. Or he may, under the rules to be framed, reserve the Bill for the consideration of the Governor-General.

The Legislative Council: Emergency powers of the Governor in respect to reserved subjects.

150. Where a Governor's Legislative Council has refused leave to introduce, or has failed to pass in a form recommended by the Governor, any Bill dealing with a reserved subject the Governor may certify that the passage of the Bill is essential for the discharge of his responsibility for the subject; and thereupon the Bill shall on signature by the Governor become an Act of the local

legislature. The Governor shall thereupon forthwith send an authentic copy of such enactment to the Governor General who shall reserve the Act for the signification of His Majesty's pleasure and upon the signification of such assent by His Majesty in Council and the notification thereof by the Governor this Act shall have the same force and effect as an Act passed by the local legislature and duly assented to. Further every such Act shall be laid before Parliament and shall not be presented for His Majesty's assent until it has been laid before Parliament for eight days.

Influence exercised by Legislature over the Executive, by (*i*) Resolutions, (*ii*) Standing Committees (*iii* Financial Control.

151. Apart from its main function of legislation, the Legislature plays a very important part in influencing the Executive. This influence makes itself felt by three main channels. First, the Council may carry a Resolution on any subject, reserved as well as transferred. Though such resolutions are not binding on Government, they must in all cases carry weight as the expression of the will of the elected representatives of the people. The exercise by the Council members of their right to obtain information by means of questions and supplementary questions also serves a subsidiary purpose both in enlarging the Council's knowledge of the functions of the Executive, and in bringing to the notice of the Executive those aspects of the administration which are arousing popular interest or criticism. The second channel for the inter-communication of ideas between the Executive and the Legislature consists in the Standing Committees, of which twelve have been constituted (in addition to the statutory committee on Public Accounts), on Finance, Canals, Jails, Industries, Co-operative Societies, Public Health, Agriculture, Education, Land Revenue and Police. Each contains a majority of elected members, and the rules regarding these committees constitute a part of the Standing Orders of the Legislative Council. These committees not only familiarize other non-official members of Council, besides Ministers, with the processes of administration, but also make the relations between the Executive and the Legislature more intimate. The third and perhaps the most effective channel consists in the new control over finance which has been granted to provincial legislatures.

The Elections: Composition of the Reformed Council.

152. The last few months of the year 1920 witnessed great activity in preparation for the elections under the Reforms Scheme. It might have been expected that, in consequence of the history of the province during the previous eighteen months, non-co-operation would have made more headway in the Punjab than elsewhere, but although in some places intimidation was practised by the irreconcilables, the voting in the general constituencies was as high as 32 per cent., while in the rural constituencies the percentage was slightly larger. The composition of the Council of 93 members was as follows:—The President, the two members of the Executive Council, 13 nominated officials, 6 nominated non-officials, and 71 elected members (including the two Ministers). The elective seats comprised 20 for non-Muhammadans (7 for urban and 13 for rural constituencies), 32 for Muhammadans (5 for urban and 27 for rural constituencies), 12 for Sikhs (1 for urban and 11 for rural constituencies), 4 for representatives of land-holders, one of whom is the Minister for Education, 1 for a representative of the Punjab University, 1 for a representative of the Chambers of Commerce, and 1 for a representative of Punjab Industries—this last is at present held by the Minister for Agriculture. The new Council met on the 8th of January 1921, when the oath of allegiance was taken by 89 members. The session was a busy one, twenty meetings being held between the 23rd February and the 19th of March. About 350 questions were put and answered, and 24 resolutions were moved. Some of these latter were, indeed, on subjects of minor importance, but in the case of others spirited debates took place.

Council Resolutions on the Amritsar Disturbances.

153. The first resolution of general interest recommended that the indemnity imposed upon Amritsar in consequence of damage committed during the disturbances of 1919 should be remitted. After a debate extending over portions of two days the resolution was carried by a majority of 48. A still lengthier debate followed upon a resolution proposing that the Local Government should introduce a Bill to revise the law relating to charitable and religious endowments. This resolution also was carried. But another, recommending the grant of an amnesty to convicts still serving sentences inflicted under martial law,

was lost by the narrow margin of two votes. On the 16th of March the Council adopted a motion advising the appointment of a committee to propose adequate compensation to the families of those killed and to those injured at the Jallianwala Bagh and other places during the disturbances in 1919, on the scale followed in similar cases for Europeans. A similar attitude was displayed by the Council in the unanimous adoption of a resolution recommending a representation to the Governor-General in Council regarding the necessity of arranging an All-India Round Table Conference of leading officials and non-officials " to consider the necessary steps to be taken to reconcile the people and to maintain law and order and to ascertain how it is possible to secure co-operation.

Suppression of the Publicity Committee.

154. In disposing of the Budget the Council, though, generally speaking, it rejected no import- session, disallowed altogther the expend- ant demands for expenditure in its first ture on the Publicity Committee. This Committee was started during the war on the line of similar organizations in Europe, in order to keep the public fully informed as to the actions and policy of Government and the progress of the war. Its activities were thus brought to a close.

The Legislative Council in 1922: Improved relations with the Executive.

155. During the year 1921-22 the Legislative Council held three sessions in addition to concluding an adjourned Spring Session of the year 1921. Acts were passed amending the Municipal Act ; fixing the Deputy President's salary ; and legislating for small towns and village *panchayats* (*para.* 158). The most memorable event was a visit which His Royal Highness the Prince of Wales was graciously pleased to make to the Council, during his short stay in Lahore. Mr. Butler continued as President throughout the year. The Budget was disposed of in six sittings. In view of the unsatisfactory condition of the finances, as disclosed in the Finance Member's Statement, the Council naturally showed a disposition to cut down grants. They acted, however, on the whole with commonsense and discrimination and readily compromised when Government was able to meet their wishes half way. The readiness of the Council to pass resolutions on subjects, involving, if given effect to, heavy extra expenditure, regardless of the unsatisfactory condition of the

Provincial Finances, gives cause for disquietude. It remains to be seen whether the members will be ready to approve of the extra taxation necessarily involved. The past year has witnessed a decided improvement in the relations between the official and the non-official benches. When the Council first met, signs of strain were not wanting on a variety of subjects. Criticism was unsparing and not always well-informed. Sobriety and co-operation are happily becoming more and more characteristic of the proceedings. At the close of the first full year's work it may be stated with confidence that the Council has made an excellent beginning and has risen to its opportunities, that the members as a rule take a keen interest in their duties, and have devoted great time and industry towards the service of the Province both in Council and in Committee.

CHAPTER VII.

LOCAL SELF-GOVERNMENT.

The Village Community.

156. Whatever the West may have had to teach India about self-government generally, in one respect she had only to learn. For in India has been preserved better than anywhere else in the world, the most ancient self-governing unit, the Village Community. From this origin grew up the City States of Greece and Rome, which may be said to have presented to the world the purest type of democracy. And of all Indian provinces the Punjab preserves this organic growth in its most vigorous form. Throughout a great part of the province the organization of the proprietors of land into village communities has existed from time immemorial, and is the work of the people themselves, and not the result of measures adopted either by our own or by previous Governments. Indeed, these communities have sometimes been strong enough to resist the payment of revenue to the Government of the day, and before British rule nothing was more common than for them to decide their disputes by petty wars against each other, instead of having recourse to any superior authority. But in some localities the present communities have been constituted from motives of convenience in the application of our system of settlement. Thus in the Simla hills and in the more mountainous portions of the Kangra district the present village communities consist of numerous small hamlets, each with its own group of fields and separate lands, which had no bond of union until they were united for administrative purposes at the time of the land revenue settlement (*para.* 211). In the south-western districts, again, while regular village communities were frequently found in the fertile lands fringing the rivers, all trace of these disappeared where the cultivation was dependent on scattered wells beyond the immediate influence of the river. Here the well was the true unit of property, but where the proprietors of several wells who lived together for mutual protection of their wells were sufficiently close together to be conveniently included within one village boundary, the opportunity was taken to group them into village communities (*para.* 209).

Survivals under British Rule: the *lambardar*.

157. The landowners of the village, connected by common descent, real or fictitious, form among themselves a democracy, which rules its dependent priests, artisans, and menials with oligarchic authority. The informal assembly of the village, has been able to bring considerable pressure on the body, is presided over by a *lambardar* (headman). Often there are several headmen. The headman of a village is appointed by the Deputy Commissioner, and, if he is recognized by the community as its natural leader, his influence equals his authority. If not, his authority is limited to such legal powers as are conferred on him, and in the South-East Punjab a leader of the opposition is regularly chosen. The headman transacts the business of the community, including the management of its common fund (*malba*) to which all contribute, and to supplement which, in many villages, a hearth or door-tax is imposed on all residents who are not members of the proprietary body. The communal body has had no legal powers; but it has been in its power to inflict on recalcitrant members of the community the punishment of social excommunication, and on the menials and artisans various inconveniences. Only the village banker has been beyond its authority; and he, by virtue of being the creditor of every man in the village, comprising every adult male of the proprietary council to order things according to his pleasure.

Attempts to revitalise the Village Community: The *Panchayat* Act of 1922.

158. For some time the feeling has been growing that unless the Village Community, as represented by its *panchayat*, were given some legal form, there was a danger that an organic growth, which has called forth the eulogies of philosophers and historians, might wither away. Its powers have been continually entrenched on by the administrative and judicial authorities created by British rule; and sympathy has been no compensation for the loss of legal authority. The *Panchayat* Act of 1912 made an attempt to give civil powers to so-called *panchayats*, which were really only arbitration committees. But these powers were limited to suits where both parties agreed to take their cases to *panchayats*, and were practically ineffective. In 1922, however, a Village *Panchayat* Act was passed which bids fair to restore to the *panchayat* its old authority

where it exists, and to revivify it in villages where it has died out, but where the corporate feeling of the Village Community still survives. Its provisions will be first applied only in those villages which are particularly numerous in the South-East, where absence of fraction and party feeling gives hope that such a *panchayat* may have the support of public opinion. The *panchayat* will be elected, though the election will be informal. It will have considerable administrative functions, and also certain criminal (and in some cases civil) powers. In addition to funds such as the village *malba* which are now allotted to common village purposes, it will be able to levy a village rate proportionate to the present rate levied for *chaukidars*. With such powers the Village Community should have the opportunity of once more regaining its old vitality and usefulness.

District Boards: History.

159. Village Self-Government is, however, a matter mainly of the past and the future. During British rule the most valuable instrument of rural self-government has been the District Board, whose functions correspond roughly with those of the County Councils in England. Prior to 1871 each district had a district committee which was merely an advisory body. The rules under the Local Rates Act of that year made these committees administrative bodies. In 1883 Lord Ripon's Act extended the elective principle to District Boards and under it local boards also were established in *tahsils*. These latter, however, were soon found to be superfluous and have now been abolished. The elective franchise was originally confined to those paying a minimum local rate, though recently those paying *haisiyat* tax (*para.* 171) have also been given the right of election. Till 1923 seats were filled by nomination in a number of backward District Boards: but they have now been reconstituted on an elective basis, while the number of elected members in other boards has been increased. The district fund is mainly derived from the local rate, which is a cess on the land revenue of the district, supplemented by grants from Provincial funds. The expenditure is chiefly on the maintenance of schools and dispensaries, vaccination, roads and rest-houses, arboriculture, ferries, cattle-pounds, horse-breeding and horse and cattle fairs.

District Boards Financial problems.

160. District Boards have afforded invaluable assistance to Deputy Commissioners as consultative bodies, but the necessity of conforming to the rules of Government Departments and Boards leaves little scope for local initiative. Recently, moreover, the problem of finance has become acute, and has dominated all the activities of District Boards. Income no longer covers expenditure (*fig.* 7). Higher prices necessitate higher salaries for the staff, higher wages for artisans and labourers working on roads or buildings, and higher prices for building and road materials. But, while expenditure has increased almost in proportion to the rise in prices, income remains relatively inelastic. Moreover, District Boards have undertaken schemes of expansion in Education, Medical Relief, and in a few cases Communications, without adequate consideration as to how the recurring expenditure involved could be met. They have been encouraged by grants from Government for capital expenditure on schools, hospitals or roads to imagine that some assistance would be forthcoming if they got into difficulties about recurring expenditure. Moreover as grants are generally made in proportion to the Board's own expenditure, every temptation was given to extravagance. Economy was advocated by no Department, was hardly understood by the members, and was left to the charge of the President, who as Deputy Commissioner had little time to spare for District Board finances from his other multifarious duties. The different services bid against each other in their anxiety to induce expenditure. Education bid highest and got the lion's share; next came Medical Relief, while Communications were left with what remained over. But now the same high prices which have increased the expenditure of District Boards have affected the finances of Government itself. Consequently the Boards are faced with a twofold increase in expenditure due to in progress at a time when it is impossible for Government both rising prices and the large schemes of expansion to increase grants.

Heads of Income and Expenditure.

161. Next to Government grants the main source of income is the local rate. This was hitherto limited to a maximum of 20 pies per rupee of land revenue. By the Punjab District Boards Amendment Act, 1923, the maximum was raised to

GROSS INCOME AND EXPENDITURE OF DISTRICT BOARDS.

Opening balances are excluded.

Up to 19 9-20 income exceeded expenditure. Since then expenditure exceeded income-in 1921-22 by a large amount.

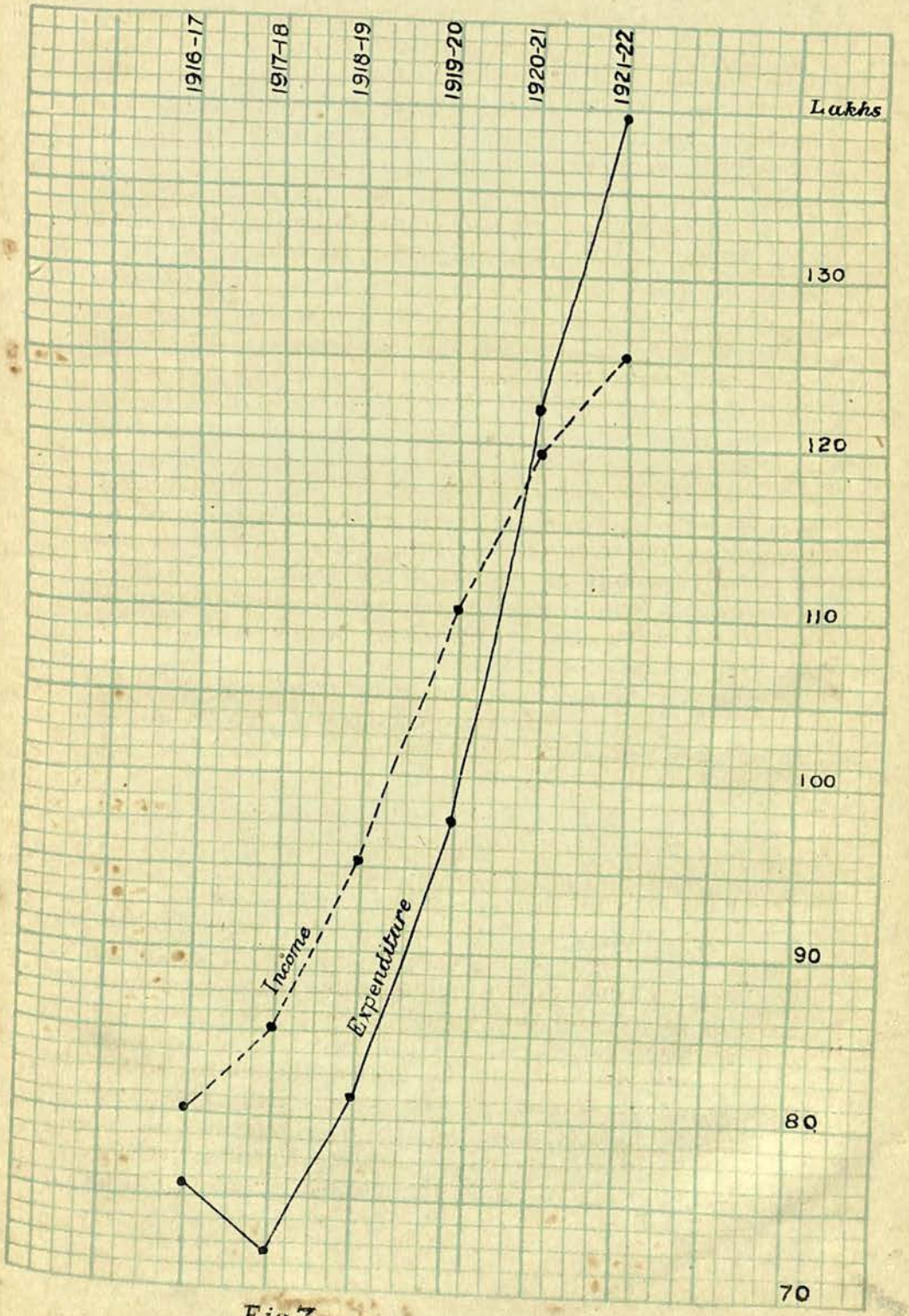

Fig 7.

MAIN HEADS OF DISTRICT BOARD EXPENDITURE

(Civil Works expenditure is shown under these heads.)

Contrast the small and stationary expenditure on Communications and Medical Relief (increase less than contemporary rise in prices) with the large expenditure on Education.

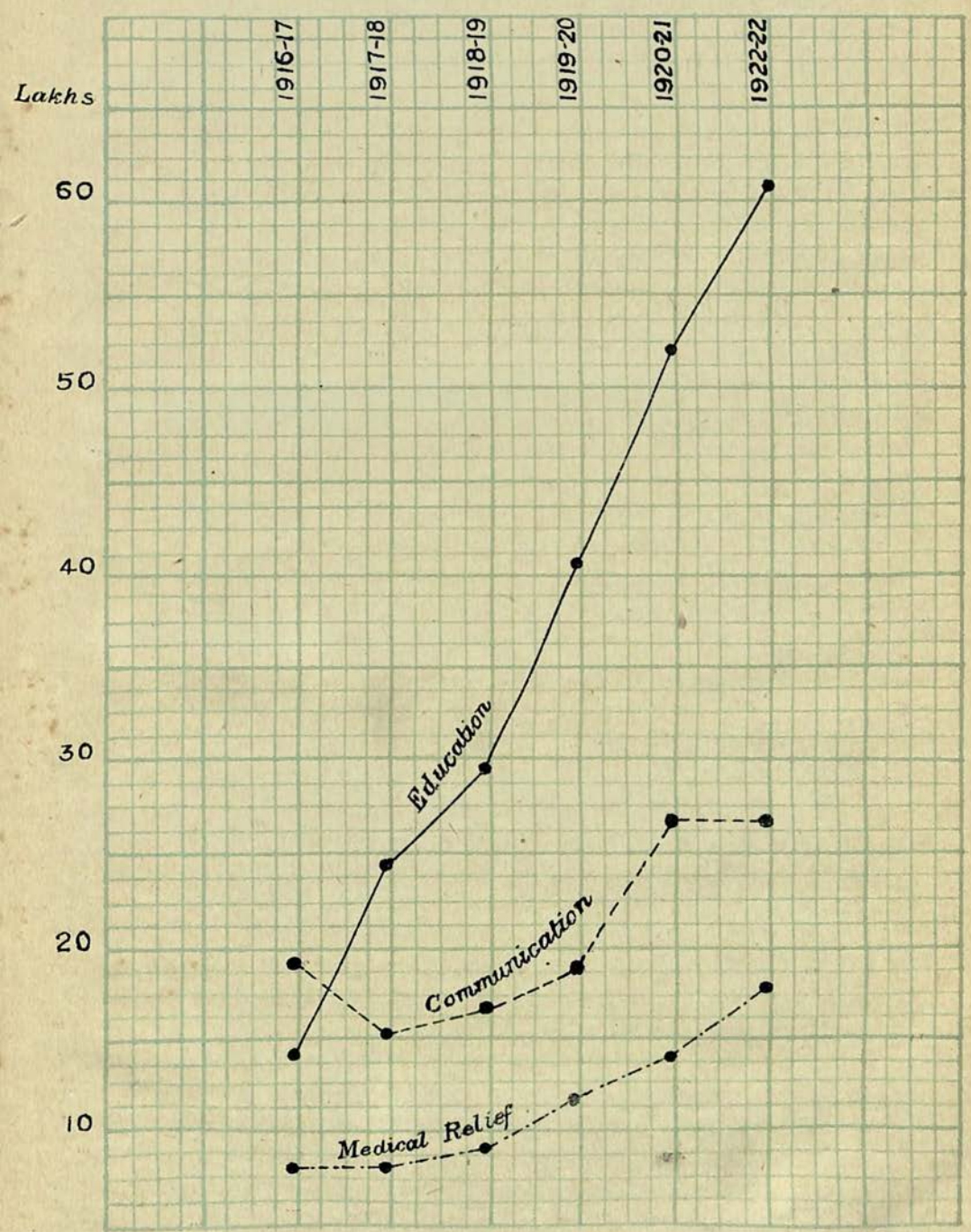

Fig 8.

two annas with a minimum of 20 pies. This will allow for a considerable, though hardly adequate, increase in income. A serious attempt to broaden the basis of taxation has been made in some District Boards. *Haisiyat* or profession taxes have been imposed on those who do not pay land revenue. There are great difficulties, however, both in the assessment and collection of this tax. Arboriculture is becoming a source of income in submontane districts like Sialkot or Ambala, and to a less degree in Canal Colonies like Lyallpur. It seems, however, unlikely that increased income will make District Boards solvent without drastic economies in expenditure. While expenditure on the important heads of Medical Relief and Communications has increased less than prices have risen, Educational expenditure has increased fourfold within the last five years. In many districts the supply of schools has outrun the demand, and the increase of schools has not brought a proportionate increase of scholars. Economy is therefore possible without inflicting unnecessary damage. The abnormal expansion of Educational expenditure has absorbed funds which were urgently required for Medical Relief and roads. A second difficulty experienced in maintaining efficient roads is caused by the greatly increased cost of maintenance. This is due primarily to heavy freight charges and enhanced wages, but in part to the increased wear and tear on the roads, for which heavy motor traffic is responsible.

Municipal Administration: History.

162. In some form or other municipal administration has existed in the Punjab ever since annexation. In its earliest stage committees of townsmen were formed to administer the surplus of the funds raised by cesses or duties for watch and ward purposes. This system worked well, but it lacked the essentials of municipal government, the funds being vested in official trustees. A more regular form of municipal administration was introduced in Simla and Bhiwani under the Act of 1850 ; and in 1862 the head-quarters of districts were formed into regular municipalities, with committees, mostly elected, invested with control over local affairs and power to regulate taxation. In 1864 there were 49 committees, of which 28 had elected members. Hitherto the municipalities had been constituted under the executive authority of Government; but in 1866 doubts arose as to

their legal status, and more especially as to the validity of the octroi tax from which their funds were mainly derived. Octroi had been introduced, or rather reimposed, by Sir John Lawrence in 1853 "in all towns and large villages in lieu of a house tax with the full preference of the inhabitants." Accordingly, the first Municipal Act for the Punjab was passed in 1867, and renewed for a year in 1872. In 1873 a new enactment, which made election permissive, was passed; and under it 190 committees were constituted, 8 of these (Simla, Dharmsala, Dalhousie, Murree, Delhi, Lahore, Amritsar and Multan) being of the first class, 17 of the second, and 165 of the third. They were controlled by the Local Government, the Commissioner, or the Deputy Commissioner, according to their class. The Local Bodies Loans Act of 1879 empowered the Local Government to make loans to approved municipalities for improvements; and in 1884 a new Municipal Act was passed, with the object of restoring the elective principle and widening the sphere of municipal activity. Two classes of committees were recognized, the first having greater latitude to incur expenditure on public works than the second. The Act of 1867 had, however, been too widely applied, and between 1885 and 1887 no less than 41 committees were abolished. In 1891 was passed an amended Act, which reformed the system of taxation, and provided a simple form of municipal administration for towns which it was inexpedient to constitute regular municipalities. The towns to which this form was applied were termed "notified areas." Amendments of this Act followed in 1896, 1900 and 1905 and it has now been replaced by Punjab Act III of 1911. In this Act certain faults of drafting and arrangement were removed and doubts felt as to the meaning of the legislature resolved.

Constitution and functions of Municipal Committees.

163. In the great majority of municipalities some of the Municipal Commissioners are elected. Representation in the larger municipalities is in general by wards or classes of the community, or both. Voters must be residents not below specified age, and property or status qualifications are generally laid down. The Chairman or President of the Municipal Corporation is sometimes nominated under the orders of the Local Government, but more often chosen

by the Municipal Commissioners from among themselves. Various provisions exist as to the exercise of control by Government, particularly as regards finance and appointments. No loans can be raised without Government sanction, and generally speaking municipal budgets, and alterations in taxation require the sanction of the Local Government, or of a Commissioner. Proposals for giving municipal committees a larger degree of independence were put forward by the Decentralisation Commission, and some action on these lines has been taken. Government may provide for the performance of any duty which the Municipal Commissioners neglect, and may suspend them in case of incompetence, default, or abuse of powers.

Municipal Finance.

164. For their revenue the great majority of municipalities still rely on the antiquated octroi system, of which disadvantages are too well known to need recapitulation. Precautions are, however, taken to limit the tax to articles actually consumed in a town, and to prevent it becoming a transit duty. The list of dutiable articles contains usually only staple articles of local consumption, of which articles of food are the most important. In Lahore, however, discussion has been aroused by the imposition of octroi on other classes of goods arriving by rail or post. Goods in transit are allowed to pass in bond or to receive a refund of duties on leaving the town. This method is open to obvious abuses. It was hoped that many of these disadvantages might be avoided by terminal taxation, *i.e.*, by a light duty on all exports and imports by rail. This was to be collected by the Railway Administration. It has worked best in districts like Lyallpur where there is no through traffic by road. In towns like Amritsar situated on main highways it has been found necessary to replace octroi barriers at main entries by road. This converts the terminal tax into what amounts to a lighter octroi on imports and exports. It does, however, do away with the abuse of refunds, and can hardly affect the trade of a well-established business centre like Amritsar. But the amount which can be obtained from octroi or terminal taxation is limited. Higher rates bring less returns. The maximum limit seems now to have been reached; and in 1921-22 the total expenditure of Municipal Committees exceeded the total income by Rs. $7\frac{3}{4}$ lakhs.

Municipal Administration.

165. Municipal administration continues to show improvement. Certain municipalities are reported to be conspicuously lacking in public spirit or swayed entirely by personal interest and party factions. But in the majority there are distinct signs of the awakening of civic responsibility. In several municipalities, non-official Presidents have been elected in place of officials, and this policy of the withdrawal of official control has increased interest in municipal affairs and strengthened the desire among the generality of citizens to become members of municipal committees. Conscientious efforts are being made in many places to deal with over-crowding; and there has also been further attention to medical institutions. Education has also received a full share of attention, particularly in Lahore and in Multan; and a number of municipalities throughout the Punjab are taking steps to carry out comprehensive schemes of drainage and water supply.

IMPERIAL RECEIPTS, PUNJAB.

INCOME-TAX RECEIPTS AND NET REVENUE FROM SALT IN THE PUNJAB

NOTE.—1 Oscillations in Salt Revenue.
2. Inflated value in war, when oversea supplies failed.
3. Steady increase in income-tax receipts.

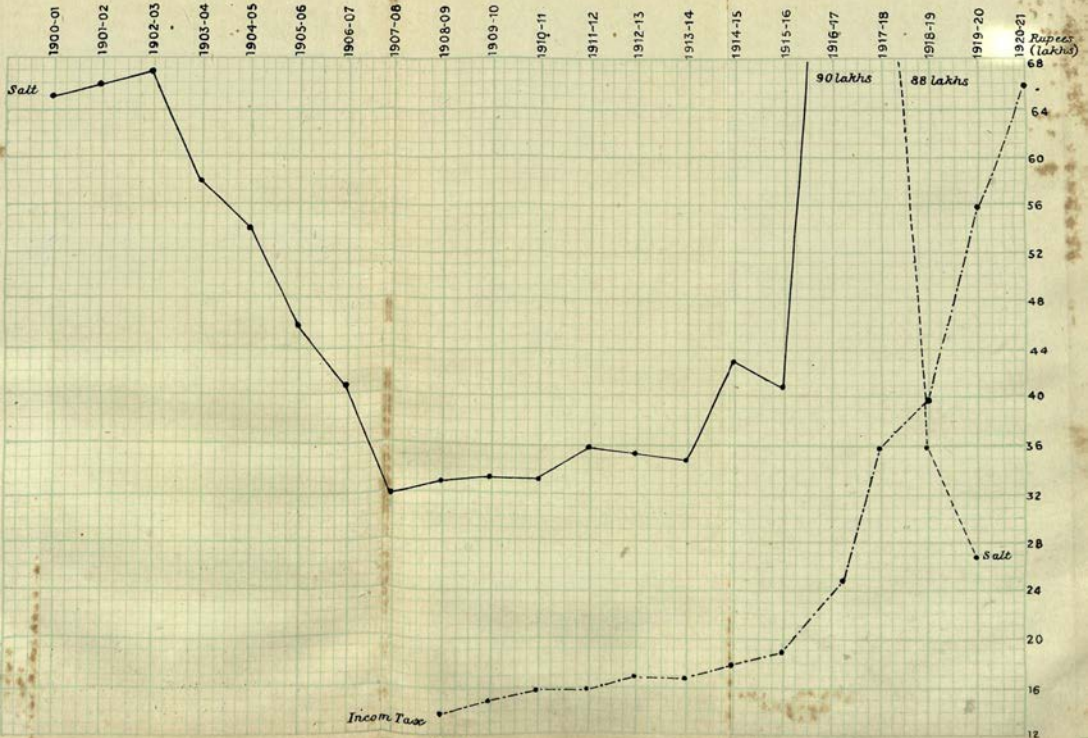

Fig 9.

CHAPTER VIII.

IMPERIAL DEPARTMENTS WORKING IN THE PUNJAB.

Income-tax: Methods of collection.

166. As has been already explained (*para.* 121) Income-tax receipts, half of which were previously credited to the province, are now credited entirely to the Imperial Government. The machinery of collection has also been placed directly under the Government of India through an Income-tax Commissioner for the Punjab, Delhi and the Frontier Province. Previously the work was in the hands of Deputy Commissioners under the supervision of Commissioners. Assessments were made by the District staff, and in rural areas the *zaildars* were generally consulted. Later on special Income-tax officers were appointed who relieved Deputy Commissioners of much of this work. Though it is too early to judge the results of the creation of a special Income-tax Department, its independence of the political atmosphere of the province will probably enable the Department to tax more effectively and efficiently.

Income-tax: History.

167. Income-tax was first imposed in India in 1860, in order to meet the financial dislocation caused by the Mutiny. It was levied at the rate of four per cent. on all incomes of 500 rupees and upwards. Many changes have from time to time been made in the system, and under the Act of 1886 a tax was imposed on all incomes derived from sources other than agriculture. On incomes of 2,000 rupees and upwards the rate was five pies in the rupee, on incomes between 500 and 2,000 rupees, four pies in the rupee. In March 1903 the minimum taxable income was raised from 500 to 1,000 rupees. The income-tax schedule was completely revised, raised, and graduated in the Budget of 1916-17 in the general scale of increased taxation imposed to meet the deficit arising out of war conditions. Since then the process has been almost continuous, and in every financial difficulty the authorities are apt to turn to the income-tax as a means of raising fresh revenue. The last revision was in 1921-22 when the scale varied from five pies in the rupee on incomes between Rs. 2,000 and Rs. 5,000 to one anna and four pies per rupee on incomes of Rs. 40,000 or upwards. The graph (*fig.* 9) shews clearly the potentialities of expansion in Income-tax. It has increased fourfold in 10 years,—a far greater proportionate increase than that that of any other source of income.

Salt Revenue: Under the Sikh rule.

168. From early times salt has been regarded as a source of revenue by Governments in India. Under Sikh rule salt was one of forty-eight articles which were liable to customs, town, or transit duties. The cis-Indus and Kalabagh salt mines were farmed out to persons of eminence ; and the farmer, as long as he paid the amount of his contract, was allowed to dispose of the salt in any manner he might think proper. He was under no restriction as regards time, place, or price, and might sell wholesale or retail, either at the mines or in distant markets. The prices charged by the farmers do not appear to have been high ; but mining and transport difficulties helped to restrict the area within which rock-salt was consumed, and the cis-Sutlej tract seems to have been almost entirely supplied at this time with salt from Kalabagh.

Salt Revenue: Under early British rule.

169. Upon annexation the management of the cis-Indus and Kalabagh mines was at once taken over by the British Government. An excise duty of Rs. 2 a maund was levied at the mines, in lieu of all charges to which salt was subject. On payment of this duty the salt was allowed to pass free throughout the British dominions, subject only to the additional duty of 8 annas a maund levied on all salt crossing the branch customs line established for the protection of the Bengal revenue. The customs line may still be traced in the Gurgaon district by the broad cactus hedge which forms an impenetrable barrier where it still exists. The duty imposed was considerably higher than the prices charged by the farmers for salt under the Sikh Government, but all articles except salt and liquor were exempted from excise, customs, and transit duties. The Imperial customs line was at the same time extended along the Sutlej and the Panjnad to the Indus at Mithankot, and a preventive line was established on the Indus to exclude Kohat salt from the cis-Indus portion of the Province. The manufacture of alimentary earth-salt in the cis-Indus Punjab was also prohibited. The adoption of the principle of a fixed duty on the production of salt, levied at the source, foreshadowed the policy now in force throughout the Punjab. Salt crossing the customs line from Rajputana into the cis-Indus Punjab was liable to the duty of Rs. 2 a maund in force in the United Provinces. The history of salt taxation in the cis-Indus Punjab from this time merges in the history

of salt taxation in British India. In 1870 a price of one anna a maund in addition to the duty was charged on rock-salt excavated on behalf of Government.

Transfer of control to the Imperial Government.

170. From 1849 to 1869 the salt mines and quarries in the cis-Indus Punjab and at Kalabagh were under the management of the Provincial Government; but in 1869 the Government of India assumed the direct control of the inland customs department, and the administration of the salt revenue in the Punjab was at the same time made over to the Imperial Department. In 1878 the customs line was abolished, but the preventive line at the Indus was still retained, only being withdrawn in 1896. Upon the abolition of the customs line, the Punjab system of levying duty at the mines was extended to the Rajputana salt sources, but the change of policy had no material effect upon the salt supply of the Punjab. Cis-Indus rock-salt continued to be the main source of supply for the trans-Sutlej Districts, and with the extension of the railway to Khewra in 1882 the demand for this salt rapidly grew.

Abolition of the salt customs line: consequent decline of the Nuh and Sultanpur Salt-Works.

171. By the annexation to the Punjab of the Delhi territory after the Mutiny two additional sources—the Nuh and Sultanpur salt-works in the Gurgaon District—were brought within the Province. The greater part, however, of the salt produced at these works was consumed in the United Provinces of Agra and Oudh. But with the abolition of the customs line they came into competition with the superior salt from the Salt Range, which only had to pay the same rate of duty. Consequently by 1883-84 the salt from the Nuh works, which were not on the railway, had become unsaleable, and the works were closed. The Sultanpur output, which amounted to 680,000 maunds in 1878, had fallen to 66,000 maunds in 1903 and 46,000 maunds in 1919.

Effects of the War: The Agency system of distribution.

172. The Punjab produces enough salt for its own consumption. But during the war it had to supply Bengal also, which had previously relied on supplies by sea. Even after the war, the scarcity inevitably arising from the lack both of internal and of overseas transport, combined with the continued cessation of supplies from German and Turkish sources, encouraged speculators to exploit the situation. Towards the end of 1920 it was decided that

the only possible remedy was to appoint, in every district in Northern India, as well as in certain Indian States, agents, to whom an allotment of salt from Northern India sources could be made monthly on the basis of population. The internal distribution of salt within each district was controlled by the District Officer, the only requirement made by the Northern India Salt Revenue Department being the limitation of commission realised by the agent. In practice, however, these limitations were difficult to enforce and they tended to remain a dead letter. The system, however, worked with fair success as long as the shortage of salt remained acute, but when increased supplies of salt in the cold weather of 1921-22 facilitated competition, the nominees proved in many cases unable to compete with traders to whom the Commissioner of Salt granted passes, a procedure which was consistent with the intentions of the Agency System. It is possible therefore that the Agency System will be abandoned, and free trade restored.

Sources of salt-supply: Salt Range Mines.

173. Rock-salt is possibly the most important mineral in the Punjab. The deposits most largely worked are those which occur in the well-known Salt Range, covering parts of the districts of Jhelum, Shahpur and Mianwali. Near the village of Khewra the main seam, which is being worked in the Mayo mines, has an aggregate thickness of 550 feet, of which five seams, with a total thickness of 275 feet, consist of salt pure enough to be placed on the table with no more preparation than mere pulverising.. The associated beds are impregnated with earth, and in places there occur thin layers of potash and magnesian salts. In this area salt quarrying was practised for an unknown period before the time of Akbar, and was continued in a primitive fashion until it came under the control of the British Government with the occupation of the Punjab in 1849. In 1872 systematic mining operations were planned and the general line of work has been continued ever since. There are smaller mines in the same range at Kalabagh and Warcha. The small mine at Nurpur has been closed recently. The Salt Range mines contain an inexhaustible supply of salt. They are worked in chambers excavated in salt strata, some of which are 250 feet long, 45 feet wide, and 200 feet high. The output from these mines has risen from about 3 million maunds in 1872 to 4½ million maunds in 1919-20 ; or a ninth of the total salt output of India.

Other sources of supply; Sultanpur and Mandi.

174. These Salt Range Mines supply the greater part of the Punjab. The south-east of the Province however is served from Rajputana (including the small source of Sultanpur in the Gurgaon district of the Punjab on the Rajputana border). This salt is obtained by solar evaporation of surface and sub-soil brine from canal, pit or well. The annual output from Sultanpur is negligible (*para.* 171). Finally there are two mines in Mandi State in the Himalayas. They are owned and worked by the State. A small quantity of salt (about 130 thousand maunds) is raised there from open quarries, where the rock-salt beds, distinctly impure and earthy, lie near the junction between Tertiary formations and the older unfossiliferous beds (*para.* 5). Formerly an establishment was kept to watch the sales and issues, as on them was based the Government share of the special duty of $3\frac{3}{4}$ annas per maund levied. Now, however, by an arrangement which is very satisfactory to both parties concerned, the Mandi Darbar takes over entire control for 5 years and pays a composition of Rs. 20,000.

Salt Administration.

175. The collection of Salt Revenue has always been under the direct control of the Government of India. The operations in the Punjab, connected with the levy of the duty on the production of salt, are under the control of the Commissioner, Northern India Salt Revenue, Agra. The Department is not under the control of the Local Government, and the income and charges do not come upon the Provincial estimates. The departmental staff employed in the province consists of a general Manager, a Mine Manager, an Assistant Commissioner and six Superintendents with headquarters in Khewra, Jhelum District, two Superintendents at Warcha (Shahpur district) and one at Kalabagh (Mianwali district). There is also one Superintendent in charge of the Sultanpur Salt Works in the Gurgaon district and a Superintendent on preventive duty at Rajanpur in the Dera Ghazi Khan district. These two officers are under the Assistant Commissioner, Upper Division, Internal Branch, Agra.

Salt Finance.

176. As stated above (*para.* 173) the output from the Salt Range Mines is about $4\frac{1}{2}$ million maunds. The present duty being Rs. 1-4-0 per maund, the gross revenue is about 56 lakhs. The cost

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of administration being Rs. 6 lakhs, the net revenue averages half a crore of rupees. As will be seen from the graphs (*fig.* 9), however, this is subject to considerable yearly fluctuations, which were greatly accentuated during the war. The duty on salt being Rs. 1-4-0 per maund, and the cost of extraction 4 annas, the price should not exceed Rs. 2 per maund anywhere near a railway. At a distance from a railway cost of carriage begins to tell, till in a nearly roadless district like Kangra the cost may be doubled or trebled. Actually, however, owing to the profiteering methods of the salt licensees, the price has greatly exceeded this limit.

Post Office.

177. The control of the Posts and Telegraphs of India is vested in an Officer designated Director-General of Posts and Telegraphs who works in subordination to the Government of India in the Public Works Department. For postal purposes the Indian Empire is divided into eight postal circles, each under the charge of a Postmaster-General. Of these, the Postmaster-General of the Punjab and North-West Frontier Postal Circle is in charge of the Punjab, North-West Frontier Province and Kashmir. The circle includes the Punjab States, with the exception of Chamba, Jind, Nabha and Patiala, which have their own postal arrangements. The Postmaster-General is assisted by two Deputy Postmasters-General and three Personal Assistants. The Province is divided into eighteen postal divisions in charge of Superintendents.

Te'egraphs.

178. The Telegraph Department was amalgamated with the " Post Office " on the 1st April 1914, and was placed under the direct supervision of the Postmaster-General, who is assisted by a Deputy Postmaster-General (Traffic) and 3 Superintendents (Telegraphs). There are 39 departmental telegraph offices, of which 5 are under the control of the Officer Commanding Lines of Communications, Army Signals, Dera Ismail Khan. The Engineering Branch of the Telegraph Department is under the Director of Telegraph Engineering, Northern Circle, Lahore.

Stationery.

179. The Punjab Government obtains its stationery from the Controller of Stationery and Stamps, Calcutta. The value of stationery supplied averages about Rs. 5 lakhs annually.

CHAPTER IX.

PUBLIC HEALTH.

Government and Public Health.

180. One of the most important functions of Government is the maintenance of the public health, the foundation of all public and private wealth and happiness. The duties undertaken by Government in this connection may be divided into (1) the fighting of specific diseases by methods of prevention and cure ; and (2) the raising of the public health generally by methods of sanitation.

The fighting of disease : History of Plague in the Punjab.

181. Till the recent outbreak of influenza, no disease had created such widespread alarm and destruction as Plague. A disease of very great antiquity, whose ravages and symptoms have been described with remarkable accuracy by the old historians, Plague appeared till recently to be a disease of historical importance only. But since 1894 its ravages have rendered it a subject of the greatest importance to the British Empire in general, and India in particular. In 1894 it became prominent in Canton. It then spread through Southern China, reaching Bombay in 1896. In October 1897 it appeared in the Jullundur district of the Punjab, whence it spread to parts of Hoshiarpur and of the Kapurthala State; disappearing after causing 2,116 deaths out of 3,412 cases. It re-appeared in the same area in the winter of 1898-99 and 1899-1900, disappearing as before in the hot weather. In the winter of 1900-01 the disease extended to the districts of Sialkot, Gurdaspur, Ludhiana, Ferozepore and Ambala, and in the following cold weather the visitation became general. In the early stages of the disease a fairly successful attempt was made to confine it to the locality of origin by an elaborate cordon. This was removed when in 1900 the Government of India formulated a plague policy in which such cordons were condemned. The disease then spread rapidly over the Province. By 1911 the Province had lost two million persons by recorded deaths from plague. But the number of unrecorded deaths must have been large, probably quite 20 per cent. of those recorded. The disease was specially fatal to young women of child-bearing age, who, for reasons of privacy, were more likely to sleep indoors, and therefore to be bitten by plague-infected fleas. The check to the increase of population in the Province was therefore greater than the actual number of deaths would indicate. But the disease seemed to have

reached its climax, and since 1911, with the exception of an outbreak in 1915, it has remained relatively quiescent. It has however never disappeared, and seems destined to remain permanently endemic in the whole of India.

Plague preventive staff.

182. The temporary Plague Department which was organised some years ago under the Chief Plague Medical Officer was in 1920 transferred from the control of the Inspector-General of Civil Hospitals, Punjab, to that of the Director of Public Health. This temporary Department being considered uneconomical, an application was made to the Secretary of State for its abolition and the substitution of a permanent Assistant Director of Public Health for the post of Chief Plague Medical Officer. Sanction having been accorded, the Plague Department will disappear as a separate unit and its duties will be merged in the general duties of the Department. At present Civil Surgeons, assisted by Temporary Assistant Surgeons, are in charge of plague operations under the orders of the Director of Public Health. This temporary plague staff is supplied with portable medical and surgical equipment, by means of which considerable medical aid is rendered, in addition to the ordinary preventive measures. The most satisfactory symptom of the growing public confidence in anti-plague measures is the increased demand for inoculation with anti-plague vaccine. The greatest reliance is placed on evacuation. Valuable as this measure undoubtedly is, it may spread infection. Refugees from a plague-infected town or village in some cases go to uninfected towns or villages, the epidemics in which are sometimes traceable to this immigration. Rat destruction is not popular. There is no doubt that an efficiently conducted rat campaign might be of great value, but it is difficult to secure the co-operation of the people.

Cholera.

183. Cholera is epidemic in the Province in the hot weather. But the cholera bacillus cannot stand the cold of the Punjab winter ; and the disease disappears annually early in October. Its reappearance usually coincides with the return of pilgrims from Hardwar at the end of April, the annual festival at that place acting as a distributing centre for the cholera bacillus. Cholera germs do not usually live long outside the human body, and the original source of every outbreak is some infected person who in some cases may have himself recovered from the disease. From him the disease is trans-

mitted either by direct contact, or more usually by the infection of the water supply or of food by flies. It follows that there are two main ways of preventing cholera—a pure water supply, and good conservancy. By means of waterworks and improved conservancy methods in towns this object is being gradually attained.

Influenza: The epidemics of 1918: First appearance in a mild form.

184. But the most destructive disease of recent years has been influenza. Starting from an unknown origin it was spread all over the world by the movements of troops during the great war. It was rumoured to be in the Punjab in July 1918, but no cases were definitely reported till August when the disease appeared in recognisable form in Simla, Lahore and Amritsar. It was then in a mild form with very low case mortality and caused no anxiety. It was more prevalent amongst Europeans than Indians. This light epidemic died out, and was succeeded by a second in September which was of much greater extent, and spread throughout the length and breadth of the Punjab. But it too was of a mild variety and caused few deaths. The mild form of the disease in both epidemics is illustrated by the fact that the death-rates in August and September were lower than the average for those months and were less than those of any other months of the year.

Reappearance in a malignant form: Terrible death-rate.

185. In October the disease appeared for the third time. It was in a malignant form and was allied with a very fatal type of pneumonia. By the middle of the month it had spread throughout the plains of the Punjab, and it reached the hill districts soon after. It appears to have been spread mainly by returning military units, post office and railway employees and general travellers. Infection was extremely rapid, the period of incubation being rather less than two days. From the middle of October to the middle of November the state of the province beggars description. Hospitals were choked, dead and dying lay by the side of the roads, burial grounds and burning ghats were strained beyond their capacity and corpses lay awaiting burial and cremation. Terror and confusion reigned supreme, the postal and telegraph services were disorganised, and a harassed and depleted medical service struggled valiantly but ineffectually to cope with the disease. During this period large numbers of the educated classes earned the grati-

tude of the sufferers by devoted self-sacrifice and social service, whilst medical students throughout the province rendered every assistance within their power.

Characteristics of the influenza epidemic.

186. The disease proved especially fatal to young adults, including women of child-bearing age, and was said to single out pregnant women more than others. It was capable of treatment, and even an elementary knowledge of simple rules of health would have rendered it much less disastrous. As far as can be ascertained the case mortality was rather under five per cent. amongst Europeans ; about six per cent. amongst Indians of the higher classes who were able to obtain medical attention ; and anything over fifty per cent. amongst Indians of the countryside who had no knowledge of the treatment to be adopted and could not obtain medical aid. The medical staff in towns could not attend all cases, but they were able to do a great deal more there than in rural tracts, by the publication of advice as to simple precautions and expedients. Consequently the mortality in urban areas was only 36 per thouasnd as against 51 per thousand in rural areas ; while in the predominantly rural district of Rohtak the death-rate reached 96 per thousand.

Fever : Invalidity of the theory that fever mortality is due to canal irrigation.

187. Disastrous as have been the ravages of these dread diseases, the deaths from fevers normally exceed those from all other causes put together. Apart from deaths, too, fever leaves its victims, weakened in health and unable to work efficiently. Any theory as to the predisposing causes of fever is therefore of value. It has often been alleged that the spread of canal irrigation is accompanied by a deterioration in the health of the people ; but the facts do not appear to bear out the theory. The graph (*fig.* 10) shows at a glance that there is no obvious connection between canal irrigation and fever ; six widely irrigated districts have a very low fever death-rate, the most widely irrigated of all is exceptionally free from fever. Only two widely irrigated districts have high fever mortality, whilst two more have a mortality close to that for the province as a whole. Mianwali and Ambala, with practically no canal irrigation, suffer severely from fever, Lahore, Shahpur, Lyallpur and Ferozepore with widespread canal systems are remarkably free.

CANAL IRRIGATION AND MORTALITY FROM FEVERS.

The first column of figures shows the number of deaths from fevers, *per mille* of population, during the decade 1911—20 omitting the year 1918.

The second column of figures shows the number of acres irrigated from canals in every square mile, in the representative year 1918-19.

The figures in the first column are plotted in a curve, and those in the second column are indicated by horizontal lines opposite to them.

Muzaffargarh ...	226	51
Mianwali ...	212	5
Gujranwala ...	205	167
Karnal ...	200	68
Multan ...	190	123
Ambala ...	182	1
D. G. Khan ...	181	34
Kangra ...	177	18
Hissar ...	175	31
Amritsar ...	174	217
Attock ...	174	2
Hoshiarpur ...	174	11
Rawalpindi ...	171	1
Montgomery ...	168	131
Gurgaon ...	167	24
Sialkot ...	159	25
Rohtak ...	156	64
Jhelum ...	154	...
Jhang ...	150	112
Gujrat ...	150	87
Lahore ...	148	213
Jullundur ...	143	...
Shahpur ...	142	141
Lyallpur ...	138	456
Gurdaspur ...	137	57
Ferozepore ...	129	144
Ludhiana ...	116	52
Simla ...	113	...

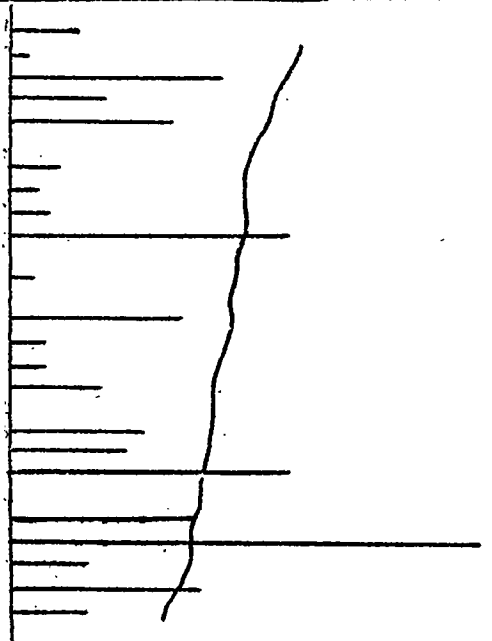


Fig: 10.

188. Moreover in those irrigated districts which do suffer from fever there are special causes for its prevalence, which, though they arise from canal irrigation, are not necessary concomitants of it; these districts are Gujranwala, Karnal, Multan and Amritsar. In Gujranwala, Karnal and Amritsar the presence of water-logging has long been recognised as inimical to health and its eradication has been the subject of much thought and endeavour (*paras.* 204, 261). In Multan, surrounded by rivers, there is a very large area of irrigation by inundation, which leaves water lying on the surface for longer than does irrigation from perennial canals. If these four districts were omitted from the diagram, the majority of irrigated districts would be left congregated at the bottom of it. Statistics, therefore, show no connection between fever and canal irrigation except when the latter is accompanied by water-logging.

Prevalence of fever in certain irrigated districts due to special causes.

189. Against no disease have preventive measures been so continuous and so successful as in the case of vaccination against small-pox. The practice of inoculation as a protection from small-pox has prevailed in the Punjab from time immemorial. The method adopted was to keep dry crusts from the pustules mixed with a few grains of rice in a box. When a mild form of the disease was desired, a few of the grains of rice were inserted into a wound near the base of the thumb, while a severe attack was procured by inserting a little of the powdered crusts. The practice was most prevalent among Muhammadans, and was performed by Saiyids and Mullas as a quasi-religious ceremony. The Hindus of the South-East Punjab did not protect themselves for fear of offending the goddess of small-pox, but elsewhere among Hindus, Rajputs and Nais (barbers) usually acted as inoculators. As late as 1887, the practice was largely prevalent in Rawalpindi, Jhang and Shahpur districts, and to a less extent in Karnal, Hoshiarpur, Kangra, Multan and Dera Ghazi Khan. With a few exceptions, the attempt to enlist the inoculating classes as vaccinators was unsuccessful.

Vaccination against small-pox: Indigenous methods.

190. Prior to 1868 there was in existence a separate Vaccination Department under a Superintendent-General of Vaccination for the preparation and supply of vaccine lymph as a preventive against small-pox. But in 1868 this Depart-

History of vaccination under British rule.

ment was brought under the direct control of the Sanitary Commissioner. The appointment of a Superintendent-General of Vaccination was abolished and the officer holding this appointment was made a Deputy Sanitary Commissioner under the Sanitary Commissioner. Owing to the large demand for vaccine lymph, the constant trouble in obtaining buffalo-calves in villages, and the inconvenience caused to the people by taking their calves from one place to another, Government agreed to the creation of a Central Vaccine Institute in the Punjab. This institute, which is located in Lahore, was established in 1907 and was under the direction of a Deputy Sanitary Commissioner. The work, which it has turned out since, has been of incalculable value in affording protection from small-pox to the many millions who have been vaccinated with the lymph manufactured by it. During the War it supplied nearly five million doses of the vaccine to the Army in India and Mesopotamia.

Present system of Vaccination.

191. The system of vaccination now employed throughout the Province is carried out by the distribution of tubed vaccine lymph from a Central Vaccine Institute. The Punjab Vaccine Institute is situated at Lahore and has a hot weather branch at Murree. Lymph is issued as chloroformed-glycerinated lymph in one gramme tubes calculated to be sufficient for the vaccination of 40 persons at four insertions each. The Vaccine Institute is worked by the Assistant Director of Public Health, Northern Range, who distributes lymph to all Local Authorities and in addition has a special vaccination staff of his own. This vaccination staff is employed to vaccinate in the Independent Hill States, to assist the District Staff when in difficulties, and to render aid whenever required in times of stress. This staff therefore constitutes a Provincial reserve for dealing with epidemic diseases. In the case of Municipalities and District Boards employing whole-time Health Officers, vaccination operations are conducted under their orders ; elsewhere they are conducted under the orders of Civil Surgeons, who have at their disposal the local vaccination staff employed by the Local Body concerned. The Local Vaccination Staff is also employed for checking the registration of Births and Deaths and for dealing with district epidemic disease. Many Cantonment Committees also employ their own vaccinators. Vaccination is compulsory only in those towns which have adopted the Vaccination Act.

The Public Health Department.

192. The Punjab Government authorities concerned with Public Health are :— (1) The Director of Public Health, (2) The Sanitary Board, (3) The District Boards, (4) Municipalities, (5) Cantonment Committees, and (6) The Sanitary Engineer. The Director of Public Health is head of the independent department of Public Health and as such is the adviser of Government on all matters connected with sanitation and preventive medicine. He is also *ex-officio* Secretary of the Sanitary Board and recorder of all vital statistics. He is assisted by two Assistant Directors of Public Health, the Chief Plague Medical Officer and the Chief Malaria Medical Officer. These last two officers will shortly be replaced by two permanent Assistant Directors of Public Health. In the larger Municipalities — Lahore, Amritsar, Multan, Sialkot, Simla, etc.,—wholetime qualified Health Officers are employed. In four districts — Gurgaon, Rohtak, Jullundur and Kangra—there are wholetime District Medical Officers of Health. Elsewhere Public Health duties are discharged by Civil Surgeons and their subordinates. Epidemic disease is dealt with by Health Officers and the Medical staff of districts working under the orders of the Director of Public Health.

Vital Statistics: Arrangements for their record.

193. The compilation of the Vital Statistics of the Province is superintended by the Director of Public Health from returns submitted for each municipality and district by the Civil Surgeons. In rural areas the village watchman is charged with the duty of reporting occurrences in his beat, which he does fortnightly to the police stations in whose jurisdiction his beat lies. In towns the Municipal Act imposes on house-holders and others the duty of reporting births and deaths to the Municipal Registrars. Besides being checked by the Sanitary and Vaccination staff, the birth and death registers of rural areas are also inspected by Tahsildars and Naib-Tahsildars (*para.* 267).

Punjab birth and death rates.

194. The appended table indicates how the vital statistics of the Punjab compare with those of previous years and also other areas :—

	Birth-rate. (*Per 1,000 of population.*)	Death-rate. (*Per 1,000 of population.*)
Punjab (average 1881—1890) ...	39	31
Punjab (average 1891—1901) ...	41	33

	Birth-rate.	Death-rate.
	(*Per 1,000 of population*)	
Punjab (average 1911—1920) ...	44	37
British India (1919) ..	30	36
England and Wales (1919) ...	19	14

Thus, though the death-rate has increased of recent years owing to the devastations of plague and influenza, the birth-rate has kept up with it. During the decade 1911—1921 the health of the Province maintained a high general level, except for the devastating epidemic of influenza which swept over India in 1918 and caused the largest number of deaths which have ever occurred in the Punjab in one year since any record of vital statistics has been maintained. Compared with other provinces in India both the birth-rate and the death-rate of the Punjab are high. In 1916, 1919 and 1920 the Punjab showed the highest birth-rate in any of the ten large reporting provinces in India. In 1911, 1914 and 1915 the Punjab birth-rate was only exceeded by that of the Central Provinces, whilst in the remaining four years of the decade only the United Provinces and the Central Provinces showed higher birth-rates. In 1915 when there was a revival of plague the Punjab was unfortunate in showing the highest death-rate in India, and in 1917 Bombay was the only province returning a higher death-rate. In the other eight years the Punjab has stood third on the list three times, fourth twice and seventh twice, whilst in 1920 it took ninth place. The actual number of births and deaths in the Province together with their effect on population are shewn in the graph (*fig.* 11).

Growth of population due mainly to economic conditions.

195. The census figures seem to indicate that economic conditions rather than salubrity govern the growth of population. In the Gurgaon district, for example, the decrease in population for the period 1901-21 is equivalent to 19·4 per cent. During the decade 1891-1901 the district showed an increase of population, but in all other census periods a serious decrease. Though the district is unhealthy the fundamental cause of this progressive decrease in population is loss of economic stimulus. The soil is poor, the water saline and agricultural methods unprogressive. Consequently prosperity in this district must be dependent on some extrinsic stimulus. In the palmy days of old Delhi Gurgaon was prosperous, but its prosperity was artificial

Population of Decade 1911—1921 as dednced by vital sraristics from Census population of 1911

Note.—1. Fall in 1918 from influenza.

2 Difference between amount according to vital statistics and census result in 1921. (marked *).

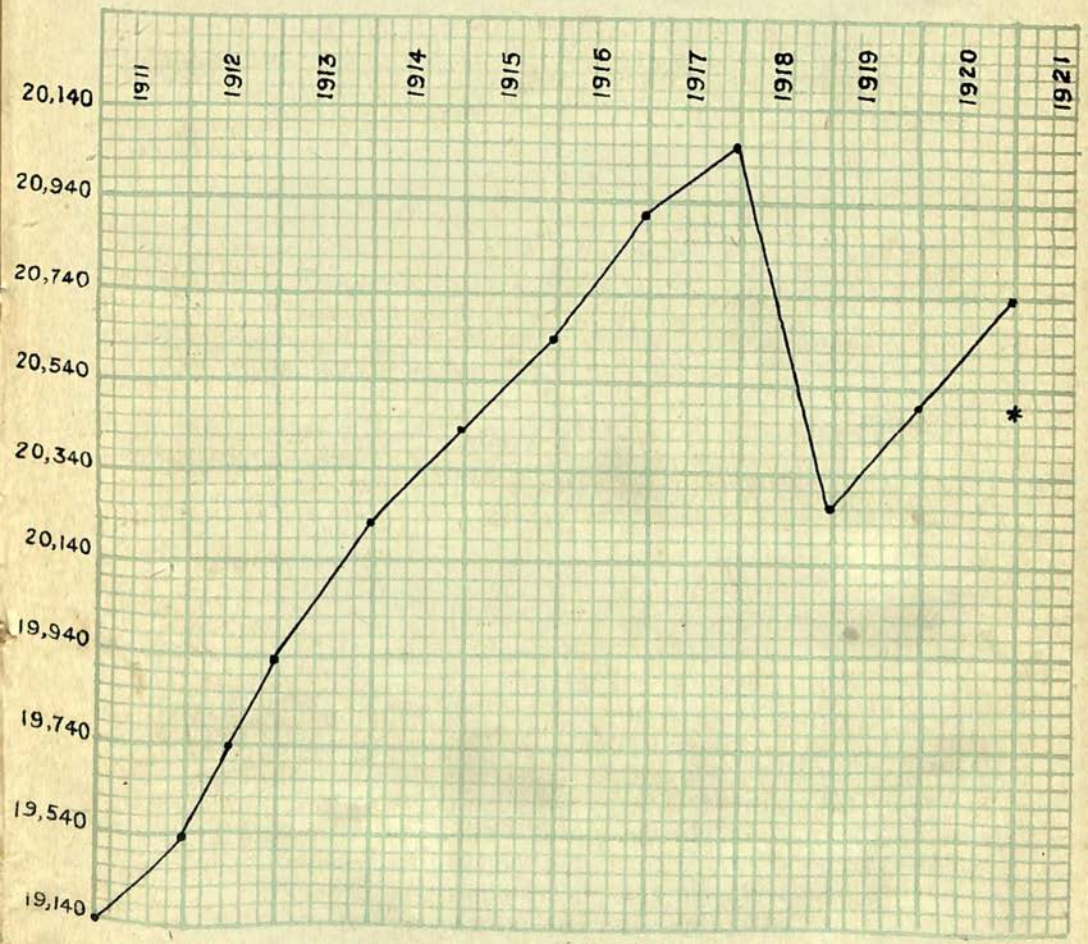


Fig 11.

depending entirely on conditions prevailing in Delhi. The stimulus declined *pari passu* with the importance of old Delhi, and so up to 1891 the population was a decreasing one. From 1891 to 1901 there was a wave of prosperity due to the construction of *bunds* (irrigation embankments) (*para.* 300). But the *bunds* quickly ceased to function, and from 1901 onwards there has been a steady decrease of population due to mortality and emigration. Emigration has been also greatly assisted by the decline of the salt industry (*para.* 171). Thus economic causes rather than its admitted unhealthiness seem to account for the decrease in Gurgaon. The irrigated district of Lyallpur with its large increase points the same moral. The association between irrigation and malaria has been emphasised *ad nauseam*, (*para.* 187), but the census figures show that a population can easily maintain itself against malaria if the economic stimulus be sufficiently powerful.

The Chemical Examiner.

196. The work of a Government Analyst is performed by a Chemical Examiner to Government, an Assistant Chemical Examiner, and two other Assistants. In addition to much medico-legal work done for the Police and Courts, analyses are undertaken for the various departments, military as well as civil in the Punjab ; for the Indian States and for the Baluchistan Agency.

Pasteur Institute at Kasauli.

197. At Kasauli, a Pasteur Institute was established in 1901 for the treatment of persons bitten by rabid animals. It now treats patients from all parts of India. Although situated at Kasauli the Pasteur Institute of India is a private association which was incorporated in 1902. It is chiefly financed by a Government grant-in-aid and by contributions from Local Governments, municipalities and district boards. But it depends largely on receipts from private individuals also. The institute performs the functions of a provincial laboratory for the Punjab in consideration of special financial assistance from Government. Arrangements are also being made to carry out anti-rabic treatment at the Mayo Hospital, Lahore, from the 1st April 1923.

Central Research Institute at Kasauli.

198. In 1906 a Central Research Institute was founded also at Kasauli. It provides means for the scientific study of the etiology and nature of disease in India, besides the preparation of curative sera for the diseases of man, and the

training of scientific workers. The institution is a separate establishment to the Pasteur Institute and is directly under the Government of India.

Leper Asylums.

199. There are leper asylums at Ambala, Rawalpindi, Subathu (Simla Hills), Tarn Taran (Amritsar) and Palampur (Kangra District). The first three are managed by the Mission to Lepers in the East. The asylum at Tarn Taran is managed by the Church Missionary Society and that at Palampur by the Canadian Mission. The number of lepers treated annually is about six hundred. Remedial treatment is carried out in all asylums; but at Palampur only to a very small extent as the asylum there is intended chiefly for the lepers in a very advanced stage. The treatment has met and continues to meet with considerable success. Lepers, however, move about the country a good deal in quest of charity, as the law does not authorize their detention against their will.

The Lahore Lunatic Asylum.

200. The only lunatic asylum in the province is the Lahore Asylum which was opened in 1900. In this are confined both criminal and ordinary lunatics. The superior staff consists of a Superintendent, a Deputy Superintendent, and an Assistant Deputy Superintendent in charge of the hospital. The female section of the asylum is in the charge of Franciscan Sisters, from whose devotion to their duties and sympathy with their patients the asylum has received the utmost benefit. Charges on account of pauper lunatics are recovered from the local bodies to whose respective jurisdictions the lunatics belong.

Sanitation: its importance.

201. The medical functions of Government are not, however, confined to fighting disease, caring for the sick, the collection of statistical data and other research work with this object. Even more important than this (it is now recognised) is the raising of the general standard of health by means of efficient sanitation. The history of sanitation in the Punjab goes back for about fifty years. During that period great improvements have been effected in the sanitary condition of the towns, though much still remains to be done. But the progress of rural sanitation which involves the health of the great bulk of the population has been slow, and incommensurate with the thought and labour bestowed on the subject. The reason lies in the apathy of the people and the tenacity with which they cling to domestic customs

injurious to health. While the inhabitants of the plains are on the whole distinguished for personal cleanliness, the sense of public cleanliness has ever been wanting. Great improvements have been effected in many places; but the village house is still often ill-ventilated and over-populated: the village site dirty, crowded with cattle, choked with rank vegetation, and poisoned by stagnant pools; and the village tanks polluted, and used indiscriminately for bathing, cooking and drinking. That the way to improvement lies through the education of the people has always been recognised.

History of sanitary organization in the Punjab.

202. In 1868 a Sanitary Department came into existence in the Punjab. In 1890 an important step was taken with a view to assisting local bodies in the Punjab in the furtherance of their sanitary schemes. This was the creation of a Board (known as the Punjab Sanitary Board) whose duties consist in examining the sanitary schemes submitted to them by local bodies and giving grants-in-aid on certain conditions from an allotment which is annually placed at its disposal by Government. To provide local bodies with qualified Sanitary Inspectors for the supervision of sanitation in their localities, Government in 1913 instituted a scheme for the training of Sanitary Inspectors, and a class lasting for about six months is held yearly for this purpose. Rules were also made requiring certain municipal committees to employ Medical Officers of Health, half of whose salary is provided by Government. As another step towards improving the sanitation of rural and urban areas Government sanctioned a scheme for the appointment in certain selected districts of District Health Officers.

The Sanitary Board.

203. The Sanitary Board as now constituted is an advisory body which distributes Government grants-in-aid to approved sanitary schemes. Its present constitution is as follows:—

The Hon'ble Minister for Education (President); the Secretary to Government, Punjab, Transferred Departments; the Secretary to Government, Punjab, Finance Department; the Secretary to Government, Punjab, Public Works Department, Buildings and Roads Branch; the Inspector-General of Civil Hospitals, Punjab; the Director of Public Health (also Secretary); the Commissioner of

the Division in which the Board meets ; Khan Bahadur Syed Mehdi Shah, C.I.E., O.B.E., M.L.C. ; Rai Bahadur Lala Milkhi Ram, C.I.E. ; Khwaja Ghulam Yasin, Bar.-at-Law ; Chaudhri Bans Gopal, M.L.C., Pleader ; Sardar Sangat Singh, M.L.C. ; Lieutenant Sikandar Hayat Khan, M.L.C., M.B.E. ; Rai Bahadur Dr. Hira Lal.

The Board examines all sanitary projects. It is the authority for granting administrative approval and technical sanction in the case of projects estimated at a certain cost ; and in the case of projects of one lakh or over, it advises Government as to the granting of administrative approval. The Board allots grants-in-aid to approved urban and rural sanitary schemes from an annual allotment placed at its disposal for this purpose. The Sanitary Engineer is the technical officer of the Board who advises on all engineering projects and who accords, on behalf of the Board, technical sanction to all projects coming within his competence. He also prepares projects for Local Boards, and when desired constructs these projects. He has now under him three Executive Sanitary Engineers allotted to areas corresponding to the circles of the Superintending Engineers of the Buildings and Roads Branch of the Public Works Department.

The Drainage Board.

204. A valuable move in the direction of improved sanitation was made by the constitution of the Drainage Board in 1918. The problem of waterlogging in canal-irrigated and other tracts of the Province had been for some time engaging the attention of the Punjab Government. The question of waterlogging is not exclusively an irrigation one, though it is often most acute in irrigated tracts. It is also caused by imperfect natural drainage, or the obstruction of natural drainages by roads, railways, irrigation channels and zamindars' embankments. The Drainage Board consists of the two Financial Commissioners ; the Chief Engineers of both branches of the Public Works Department ; the Director of Agriculture, and the Principal of the Agricultural College; the Director of Public Health; and the Sanitary Engineer. In 1921 a Special Drainage Engineer was appointed to the considerable improvement of the effective working of the Board. Other members may also be co-opted. The Board deals only with waterlogging in rural areas, and has concentrated its attention on certain

specific schemes, of which two in the Amritsar and Lahore, and Karnal districts, respectively, are the most important. On the scientific side, enquiries have been prosecuted in regard to the mechanics of waterlogging, the rise and fall of the sub-soil water table, and the possibility of water-proofing canal beds. A research scholar has been despatched to England to study the phenomena of the flow of water in different kinds of soil. Some very interesting experiments have been undertaken by the Drainage Engineer at Rasul with a view to testing the efficacy of linings water-proofed with asphalt. Generally it may be said that the foundations have been laid for the efficient drainage of the rural areas of the Province.

CHAPTER X.

LAND ADMINISTRATION.

Prevalence of Joint-village tenures in the Central Punjab.

205. Emphasis has already (*para.* 156) been laid on the importance to the Punjab of the Village Community from the point of view of Local Self-Government. It is no less important as a unit in Land Administration. Such communities are mostly strong, well preserved, and the greater part of them of the type distinguished as the 'joint or landlord' type, and more appropriately than any other they can be called 'communities.' By these phrases it is desired to indicate that the village owners, whatever their origin, have a strong sense that they, as a body (whether actually enjoying the lands in severalty, or still remaining wholly or partly undivided), have the landlord's right over the whole area of the village, arable and waste alike. The Punjab had not come under British rule till the days of revenue-farming and harsh sale of lands had passed away for ever. Village owners are, therefore, only occasionally the representatives of revenue-farmers ; and these few cases derive their origin from Mussalman or Sikh, and not British times.

Origin of Joint-villages : The Jats and Gujars.

206. As regards the province generally, the evidence does not point to a growth of landlord bodies over earlier non-landlord groups. The joint-village of the Punjab plains is not occasional. It occurs over the whole country, and seems to be the result of an occupation by special tribes. Indeed, it may be suggested that the reason why the first Aryan settlers avoided the Punjab plains, and settled so far east as the Jumna, was that the Punjab had already begun to be peopled by those other tribes (chiefly Jats or Gujars, in the Central districts). Whatever the truth as to this may be, the tribes appear to have come in sufficient force to occupy large areas, or to form, by multiplication in the course of time, a complete net-work of villages held by tribesmen who, being conquerors, left to their descendants that joint claim to their several locations, which is necessary to the constitution of the 'landlord' village. If we look at any tribal map of a Central Punjab district, though time and the effect of wars, feuds, and subsequent conquests have much 'honey-combed' and broken up the original areas, it is impossible not to see what large territories Jats, Gujars, and

other great tribes have occupied. We may safely conclude that all those tribes certainly had, and still have, the 'family' idea of property—the joint succession, and the same feeling of superiority which accompany the 'landlord' claim over village-allotments.

Joint-villages proper; confined to Central and South-Eastern Punjab.

207. The description given above applies, almost universally, throughout the central and south-eastern parts of the province; and it should be noted that these were the first parts to come under British rule, and also that the tenures in them resemble those in the United Provinces which had long been familiar to British administrators before the Punjab came under their sway. In the sandy stretches of the south-west, the hilly country to the north-west, and more than all in the Himalayan tracts, the distribution of right was originally very different and the type of village described was unknown. But the early British administrators with pre-conceived ideas on these subjects managed to graft the types of land tenure with which they were familiar on to a countryside to which they were totally alien.

Tenures of the South-West Punjab: Well ownership.

208. In the south-west the population was still largely nomadic and pastoral when it first came under British sway. Dotted over the country were small hamlets occupied by a few persons who had built a well and cultivated a small patch of land round it. These people regarded the surrounding country as subject to their grazing rights, but had no sense of any joint ownership in the waste, and ascribed their ownership to the fruits of breaking up the soil and not to inheritance. Such small hamlets were artificially grouped in villages, and the theory of joint ownership of the waste within the boundaries of such villages was artificially introduced. At the same time vast areas of waste which had never been subject to the plough were found to be absolutely unappropriated and were, in accordance with local sentiment, declared to be Government property.

Special classes of proprietors in South-West Punjab: *Chakdars* and *Silhadars*:-

209. Consequently in Multan, Muzaffargarh, Dera Ghazi Khan, Jhang, and in parts of some other districts in the south-west of the Punjab, a class of proprietors, distinct from the owners of the land, is found under the name of *chakdars, silhadars, tarradadgars* or *kasurkhwars*. These are the owners of wells, or occasionally of

irrigation channels, constructed at their expense in land belonging to others. They possess hereditary and transferable rights, both in the well or irrigation-channel and in the cultivation of the land irrigated from it, but may be bought out by the proprietor repaying the capital they have expended. They are generally entitled to arrange for the cultivation, paying a small fixed proportion of the produce to the proprietors, and being responsible for the Government revenue. Sometimes, however, the management of the property has been made over to the proprietor, who pays the Government revenue, and the *chakdar* receives from him a fixed proportion of the produce called *hak kasur*. Or a third party may manage the property, paying the revenue and the *hak kasur*, out of which the *chakdar* pays the proprietor's allowance. In Rawalpindi also there is a small class of well proprietors in the position of middlemen, paying cash rent to the owner of the land and receiving a grain rent from the cultivator.

Tenures in the North-West Punjab: domination of warlike tribes.

210. In the north-west, strong warlike tribes had collected in fairly large villages for the sake of mutual protection, these villages being strongholds rather than agricultural settlements. Scattered round these strongholds were the small hamlets of the non-warlike population, who existed under the protection or subject to the tyranny of the leading tribes. Their settlements were too unimportant to attack and usually consisted of a few houses built in the immediate vicinity of the lands cultivated by their owners.

Himalayan tenures: hamlets united in artificial villages.

211. In the Himalayas the dense forests and the precipitous nature of the country rendered cultivation possible only in isolated patches. Anyone who cleared and broke up a small area of land built his house in the clearing, and except in the more continuous and fertile valleys man was not able to satisfy his gregarious instincts. Each settler would collect his firewood and graze his cattle in the surrounding forests, and thus gradually create a right over the waste in the vicinity of his clearing. Where clearings were close together convenience led to neighbouring settlers establishing joint rights in the waste, and as population increased and interests began to conflict, specified areas of waste would become recognised and subject to the exclusive rights of use of several settlers. Thus a whole valley,

the whole of one side of a hill, or any other natural division of the country might become subject to the rights of user of several settlers who had individual cultivated clearings scattered about over it. These settlers with common rights would not necessarily be related and might belong to entirely different tribes or castes. A small tract of country, subject to the common rights of user of persons residing in scattered residences over its surface, is the natural unit of these hills. Such units are known by different names in different localities, and in many of the hill states they form the administrative unit and are known in English as villages ; in others they are so small as to be useless as administrative units and have been grouped together in blocks to suit the local form of administration. Throughout the Himalayas the village unit, as demarcated for census purposes, is an artificial one ; and no statistics concerning the number, size or proximity of villages within the Himalayan tract are of any utility whatsoever.

Associated colonists in the South-East.

212. There is yet another group of village formations to be noticed. It occurs in the strip of territory along the south-east frontier. Here we find many (and recent) cases of voluntarily associated bodies of colonists, forming villages ; most of them within the nineteenth century. Whether these villages (now joint-villages under our revenue system) were really and originally joint, is doubtful.

Limited proprietors.

213. There are sometimes also proprietors holding lands within the estates of village communities, but who are not members of the communities, and are not entitled to share in the common profit, nor liable for anything more than the revenue of their own lands, the village charges ordinarily paid by proprietors, and the quit-rent, if any, payable to the proprietary body of the village. The most common examples of this class are the holders of plots at present or formerly revenue-free, in which the assignees were allowed to get proprietary possession in consequence of having planted gardens, or made other improvements, or because they had other claims to consideration on the part of the village community. In the Rawalpindi division also it was thought proper to record old-established tenants, who had never paid anything for the land they held but their proportion of the land revenue and village expenses, and had long paid direct to the collectors of the revenue, but were not descended from the

original proprietary body, as owners of their own holdings, while not participating in the common rights and liabilities of the proprietary community. Except in the Jhelum and Rawalpindi districts, where a small quit-rent was in some cases imposed, these inferior proprietors, called "*malik kabza*," were not required to pay anything in excess of their proportion of the Government revenue and other village charges. In Gujrat, at the time of the first regular settlement, this class held no less than 10 per cent. of the total cultivated area, and in Rawalpindi it paid 9 per cent. of the revenue. In Rawalpindi the persons, recorded as proprietors of their own holdings only, were in some cases the representatives of the original proprietary body, *jagirdars* having established proprietary rights over what were formerly the common lands of the village.

Effect of British Land Administration on the indigenous system.

214. The various origins of Punjab tenures have been described. It remains to see how the indigenous systems were affected by their contact with British rule. The tenure of the village lands as registered in the British land records depends mainly on the extent and nature of the partition that had taken place before accurate land records came into existence. If when these were first compiled the separate rights were found to be in direct relation to the theoretical rights by inheritance, then the rights in the undivided waste were held to be in the same proportion, and subsequent partitions were made on the basis of the family tree. If existing rights were found to be irreconcilable with the theory of proportional inheritance, the rights in the waste might be held to be in the ratio of the extent of existing rights of ownership in the cultivated land, or perhaps in the ratio of the revenue payable by each member of the village.

Transfers of proprietary rights.

215. The original simplicity is complicated by the fact that original owners may have sold or gifted portions of their separate holdings. In some cases such gifts and sales have been understood to include the dependent share in the undivided lands, in others not. In cases where a share in the waste has followed the transfer of separated lands the effect is merely to introduce an outsider into the group of owners and to modify the shares in the joint property. In the reverse case the outsider becomes an owner of a specific plot

of land only, whilst the original group of owners continue to have all the rights in the waste.

Official terminology : *Zamindari* villages.

216. When the British reached the Punjab, they had already adopted a classification of tenures. This classification was applied to the Punjab tenures, even in cases where it was inapplicable. The term *zamindari* was really intended to apply to those cases in which a village had a single landlord, and a large number, if not the majority, of such landlords were in the North-Western Provinces, revenue-farmers and auction-purchasers. In the Punjab such landlords were rarely to be found (*para.* 205). Still there were cases where, from one cause or another, a single person had become landlord. In the course of a few years, such a landlord was commonly replaced by a more or less numerous body of sons and grandsons, who for a time enjoyed the right undivided : and therefore the term *zamindari* became subdivided into *khalis* (simple), where there was still one individual landlord, and *mushtarka* (joint), where there was a body of descendants enjoying rights as co-sharers.

Pattidari villages.

217. In the same way, *pattidari* was meant to indicate, not merely that the family had divided the shares in the soil, but that the property was held, more or less closely in accord with the equal fractional shares of the law and custom of inheritance. If there was a scheme of equal sharing, but on some other principle than the inheritance-fractions, it was not a case of *pattidari*. But in the Punjab, the term is more loosely used to include a severalty holding on any scheme of shares, where those shares are really *parts* of what was once regarded as *one*.

Bhaichara villages.

218. The term *bhaichara*, as first used in 1796, properly indicated a special variety of landlord village ; but *bhaichara* now means any form of village where possession is the measure of right, or where ancestral fractional shares were not respected in alloting the shares originally. Most commonly villages called by this name are estates in which ancestral shares have been forgotten or in which the shares go by ' ploughs ' or by ' wells,' and not by ancestral fractions. In the Punjab such villages appear to be much more numerous than they are in the United Provinces.

Tenancy.

219. The above classifications deal with ownership. But though the Punjab is *par excellence* the province of the cultivating proprietor, yet out of a total cultivated area of 29 million acres in 1918-19, nearly 15 million acres were cultivated by tenants. The most usual form of rent is a specified portion of the produce raised by the tenant known as *batai*.

Occupancy tenants

220. Sometimes an owner may have had difficulty in securing tenants and has had to offer unusual attractions to obtain them. He may have guaranteed a fixity of tenure extending for their lives or even to their descendants ; or he may have gone away and neglected his land, and the tenants may have gradually acquired prescriptive rights in his absence, which on his return he has found it necessary to recognize. In these and in many other ways has arisen a class of tenant, known as an 'occupancy tenant,' who has a hereditary right to cultivate the land on payment of a rent to the owner which may be, but generally is not, an economic rent. In some cases such rent is merely nominal or is no more than the Government revenue.

Inferior owners.

221. Very similar to the case of a landlord, whose land is in the possession of occupancy tenants paying a nominal rent, is that of the superior and inferior landlord. In this case the inferior landlord exercises practically all rights of ownership except that he pays certain dues to a superior landlord. Both occupancy tenants and inferior landlords may or may not have the power to transfer their rights to persons other than their heirs, and in cases where they have not this power an attempt to do so may result in the land reverting to the landlord or superior landlord in full ownership.

Tenants' tenures

222. Tenancies, therefore, other than those of Government tenants in the Punjab, naturally fall into three great divisions, *viz.* (1st) those which are held by tenants with rights of occupancy under the Punjab Tenancy Act (XVI of 1887) ; (2nd) those which are held under decree of court, lease, or other special agreement ; and (3rd) those which are held as tenancies-at-will. These groups may be further sub-divided by the nature of the rent paid, or in the case of tenants with rights of occupancy according to the particular section of the Punjab Tenancy Act under which these rights are held.

Description of tenancies.

223. The rents of tenants with rights of occupancy are liable to enhancement or reduction in accordance with fixed rules which are embodied in the Tenancy Act. And so long as the appointed rent is paid, the occupation of the tenant cannot be disturbed. This tenant right is inheritable by male lineal heirs, by the widow and by male collateral heirs, provided that in the case of the latter the common ancestor occupied the land ; and subject to certain restrictions it is also transferable, although in practice it is not very often actually transferred. The widow inherits only a life interest in her deceased husband's holding. Moreover, next to the proprietors, tenants, with a right-of-occupancy, have a pre-emptive claim to purchase any land offered for sale in the village in which their holdings are situated. Tenants-at-will are so far protected that they cannot be ejected save after issue of notice through a court of law. These notices are only issued at particular seasons of the year, and opportunity is given to any tenant either to contest his liability to ejectment or to claim compensation for unexhausted improvements as a condition precedent to relinquishment of the land if he wishes to do so. The right to compensation is also regulated by fixed rules embodied in the Tenancy Act.

Tenures of Government waste lands.

224. The management of the immense waste areas of the territory included in the province forms a long chapter in the history of the provincial administration. These areas are mainly owned by the State, but a not inconsiderable amount is included in proprietary estates, and the present Revenue Act still empowers the Local Government to step in and proceed to develop such areas for the benefit of the community under certain conditions. The earliest attempt in the Punjab to colonise waste land was the grant of *sukhlambari* grants in Hariana and Bhattiana in 1818 to disbanded troopers with the object of forming a military colony in this disturbed area and so keeping open a western route to the existing frontier. The state of the country did not prove tempting to settlers, and this experiment resulted in failure. On annexation for a period of over 35 years the policy as regards these waste areas was to encourage the breaking up of waste by the grant of leases on easy terms, on the understanding that, on fulfilment of the terms of the lease as regards the bringing of land under cultivation, ownership would be conceded

free or practically free of charge. This policy underlay the lease rules of 1850, 1868 and 1882 and the sale rules of 1863, 1865, 1876 and 1882 were influenced more by the desire of Government to extend cultivation than by any general demand for land. The comparatively small amount of land actually alienated by the State is evidence that the liberal terms offered were not unjustified. Even the lease rules of 1885 permitted purchase on extremely liberal terms, but in view of the imminence of great extensions of canal irrigation in the State-owned waste the operation of these rules was speedily restricted. New rules, however, were not issued until 1897 ; and do not apply to areas likely to be colonized. Under these rules a right of occupancy is in general the only permanent right which the lessee can acquire.

Canal Colony tenures.

225. A comparatively modern innovation in land tenure and in types of villages has been introduced during the process of colonisation of those Government waste lands in the west which have been rendered fit for cultivation by the introduction of canal irrigation. On being irrigated these wastes were divided up into villages of convenient size and the lands of each village which were fit for cultivation were granted to settlers from the old districts. The grants took various forms; some whole villages were let out to capitalists on payment, others were granted to persons who deserved well of Government ; more usually however separate plots in each village were granted and the grantees were required to take up residence and build houses on a site set apart for the purpose. In the first instance grantees, after a period of probation, were usually given rights of occupancy tenants' holding under Government, various conditions being attached to the tenancies. These always included the duties of taking up permanent residence and cultivating the land allotted. Other conditions such as the keeping of brood mares for horse-breeding, the breeding of camels, the introduction of scientific methods of agriculture, the cultivation of superior varieties of particular crops, and so on, were sometimes enforced in addition. In all villages a certain area remained unallotted, and was retained by Government to be utilised as grazing grounds or for some other common purposes.

Tenures of first Canal Colonies.

226. The first leases granted to the pioneer settlers of the Sidhnai (Multan) and Sohag Para (Montgomery) colonies (1886-88) were modelled on the rules for the lease of Government waste lands

sanctioned by the Government of India in 1885, and gave the lessee the option of purchasing proprietary rights in his holding, at a very moderate price. The experience gained led to doubts as to the advisability of allowing unrestricted powers of alienation to the colonists, and in 1890 the Supreme Government suggested the grant in future of an inalienable right of occupancy rather than of an alienable proprietary right, as more in accordance with the real interests of colonists : and in the Chenab Colony scheme permanent rights of tenancy became the ultimate form of tenure contemplated for the " peasant " class, the vast majority of the colonists. Provision was, however, made for the creation of proprietors in the " yeoman " and " capitalist " classes of *nazrana*-paying grantees, and by the sale of land by public auction. The magnitude of the Chenab colonisation scheme and unsuitability of the existing law to the novel conditions led to the Government Tenants (Punjab) Act III of 1893 : the main object of which was the simplification of the execution of contracts between the State and its tenants. Registers of tenancies were to be maintained, signatures to the entries in which validated the status of the grantees. The rights of tenants were protected from attachment or sale in execution, and transfer by sale, gift, mortgage or other private contract without the consent of the Financial Commissioners was prohibited. Statements of conditions under the Act replaced the old leases and defined the terms of the contract.

Chenab Colony tenures.

227. On the Lower Chenab Canal the peasant colonists received tenancies for 20 years with the free grant of occupancy rights at the expiration of five years from the date of lease, provided its conditions had been observed. The yeomen and capitalists were charged a fine or *nazrana* on entry, and were given the option of purchase after five years' occupation if they reduced a fair proportion of the grant to cultivation and fulfilled the conditions. The old Chunian Colony (Lahore) was allotted in 1897 on the same terms, but only peasant grantees were selected. The desire to rescue from extinction the herds of camels which were gradually disappearing before the advancing plough led to the camel service conditions on the Lower Chenab Canal ; the grant in these cases depending on the maintenance of a camel fit for State service. The principle of the impartibility of these grants became an essential feature, and a rule of

restricted succession was sanctioned, power being reserved to select an heir on the demise of the colonist.

Jhelum Colony tenures.

228. The success of the peasant class in the Chenab Colony led to the conviction that it would be to the interest both of Government and of all classes of grantees if only occupancy rights were granted. Accordingly in the Jhelum and Chunian extension colonies while the classes of peasants, yeomen and capitalists were maintained, the tenures of all were restricted to occupancy rights. The *nazrana*-paying grantee obtained his rights on entry after payment of one instalment of *nazrana*, the peasant after five years: without payment if bound by horse-breeding conditions, otherwise, on payment of nominal charge. The Jhelum Colony is in the main allotted to colonists on horse-breeding conditions: this being due partly to the success of the camel-breeding conditions on the Chenab Canal and also to the recommendations of the Horse and Mule Breeding Commission of 1901. The tenant is in such cases bound to maintain and breed from a mare approved by Government. In the Jhelum Colony conditions stereotyped rules of primogeniture replace the previous undefined power of selecting an heir, and these rules were made applicable to the *nazrana*-paying grantees not bound by service conditions as well as to all service grantees.

Special Colony tenures.

229. Small grants have been made in most colonies on condition of maintaining nurseries or planting trees, and it is customary to allot small areas in each village to be held at will by the village menials or *kamins* under the management of the headman of the village. To increase the status of the headman himself, more particularly in peasant villages, it has been found advisable to allot a holding usually of some 28 acres to each headman, tenable with the office of *lambardar*. In the Chenab Colony with few exceptions these *lambardari* grants are held on mule-breeding conditions, the *lambardar* being bound to maintain and breed from an approved mare fit for breeding mules for the army. In all peasant villages of the main colonies an area, misnamed *chiragah* or grazing ground, is reserved from allotment. The area varies according to the period at which allotment was made, from 20 per cent. of the village area in early allotments to 10 per cent. in recent colonisation. The chief advantages

derived in practice from the *chirâgah* are the preservation of an open space for the various domestic needs of the villagers, the supply of a little timber and fuel for the village and the provision of an area from which unforeseen demands for allotment can be met.

Change of policy: Grant of proprietary rights.

230. After the settlers had been some years in occupation and had demonstrated their intention of taking up permanent residence and had made satisfactory progress in breaking up and cultivating the lands allotted to them, the majority of those who did not hold on special conditions were allowed to purchase proprietary rights in their tenancies. After they had done so the type of village evolved closely resembled that in the south-eastern plains, the main difference being that instead of the waste land being common property it was unallotted and remained the property of Government though devoted to the common use of the villagers. Such villagers can, of course, trace no descent from a common ancestor, and do not form such a corporate body as the inhabitants of old villages. But at the time of colonisation efforts were made to group together members of one or two associated castes coming from the same part of the province, and though the villagers are not necessarily connected by family ties, they are far from being chance collections of miscellaneous origin.

Cultivating occupancy.

231. The rent paid by Government tenants usually takes the form of the land revenue, which is payable by owners generally, *plus* an additional *malikana*. This *malikana* is everywhere so small that the Government tenant's power of subletting his land is scarcely less than that of the owner elsewhere ; and his economic position is for all practical purposes the same. To make the statistics for cultivating occupancy of any practical use it has, since the development of the Chenab Colony, been found necessary to class Government tenants with owners.

Proprietorships.

232. Taking the British districts of the province as a whole it may be estimated that about one-sixth of the area is the property of Government, the remaining five-sixths belonging to private owners. A large part of the area belonging to Government is so situated that it cannot be brought under cultivation without the aid of extensive works of irrigation. Large areas

in the hills and elsewhere, which are unsuited for cultivation, are preserved as forest or grazing lands, and others. in addition to the Colony lands, are held under lease from Government for purposes of cultivation.

Small size of holdings.

233. The average area owned per owner is 15 acres. But the average area cultivated is per owner, 7 acres ; and per tenant, 5 acres. This average, however, does not represent the facts fairly. In the congested districts, Jullundur, Gurdaspur, and Hoshiarpur, where well-irrigation is common, the average holding is 4 acres. In the south-east where there is no irrigation holdings are much larger, and similarly in the west Where holdings are small only the most unremitting industry will serve to provide a livelihood. The system of cultivation must be highly intensive, and the income from the land must be eked out by income from some subsidiary occupation. The example of Belgium is sufficient to shew that small holdings are not necessarily a bar to prosperity ; that enterprise, science, co-operation, capital, and painstaking labour will yield a living from a small area. But the land must be devoted to those uses which will give the highest returns to human intelligence and skill. In short, if the Punjab peasant is to become really prosperous, he must revolutionise his methods.

Fragmentation of holdings.

234. But cultivation is not only handicapped by the smallness of the individual holding but by its excessive fragmentation. The agnatic principle of succession by equal division among male heirs has produced small holdings, and the desire for equality has caused fragmentation ; each co-sharer on a partition insisting on a separate share in each quality of land. Repeated partition leads to more and more scattered holdings, and it is quite usual to find an owner of no more than three acres with thirty or more separate fields scattered about over an area of two or three square miles. Repeated sub-division, and wide distribution of scattered holdings are the bane of the indigenous system of land tenure. It requires little imagination to picture the waste of effort, and the difficulties as to trespassing and rights of way with which it must necessarily be connected.

Consolidation of holdings.

235. Similar difficulties arose in mediæval England under the open field system. These difficulties were solved by the " enclosures "

MAP OF HOLDINGS IN GORAYA VILLAGE, PHILLAUR TAHSIL, JULLUNDUR DISTRICT.

BEFORE CONSOLIDATION.

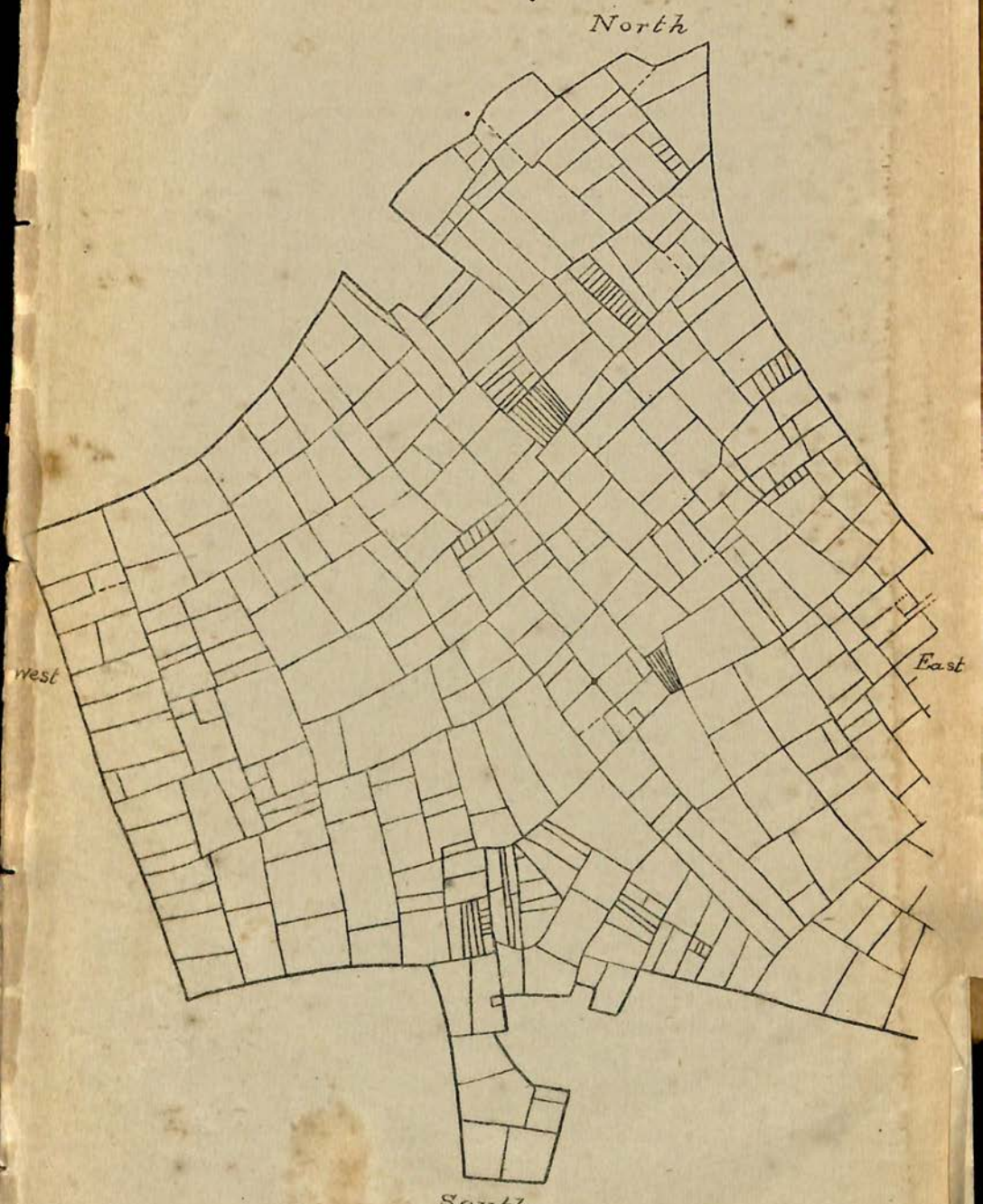


Fig. 12.

MAP OF HOLDINGS IN GORAYA VILLAGE.
AFTER CONSOLIDATION.

The scattered holding of the recalcitrant who refused to consolidate is shown shaded.

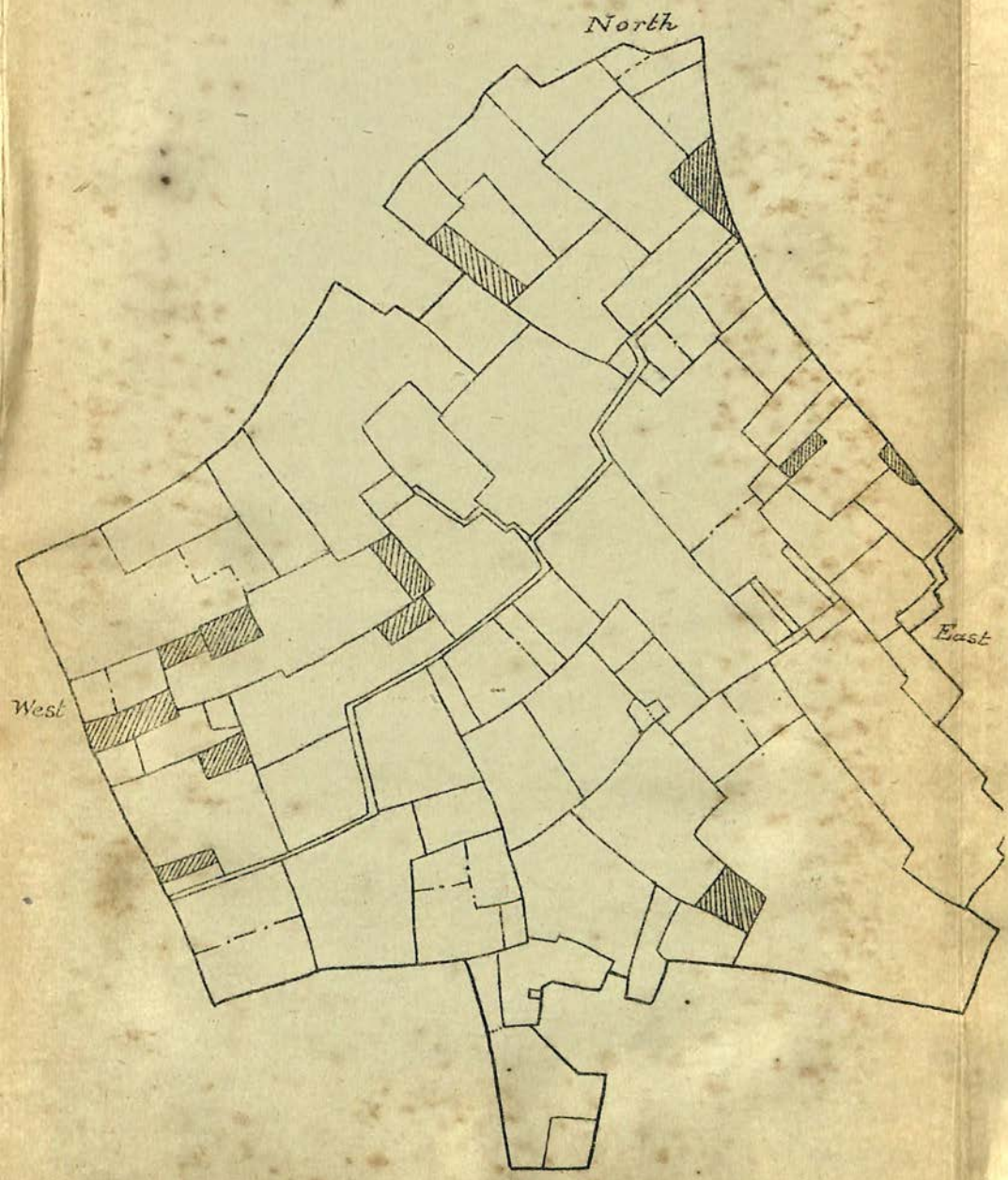


Fig. 13.

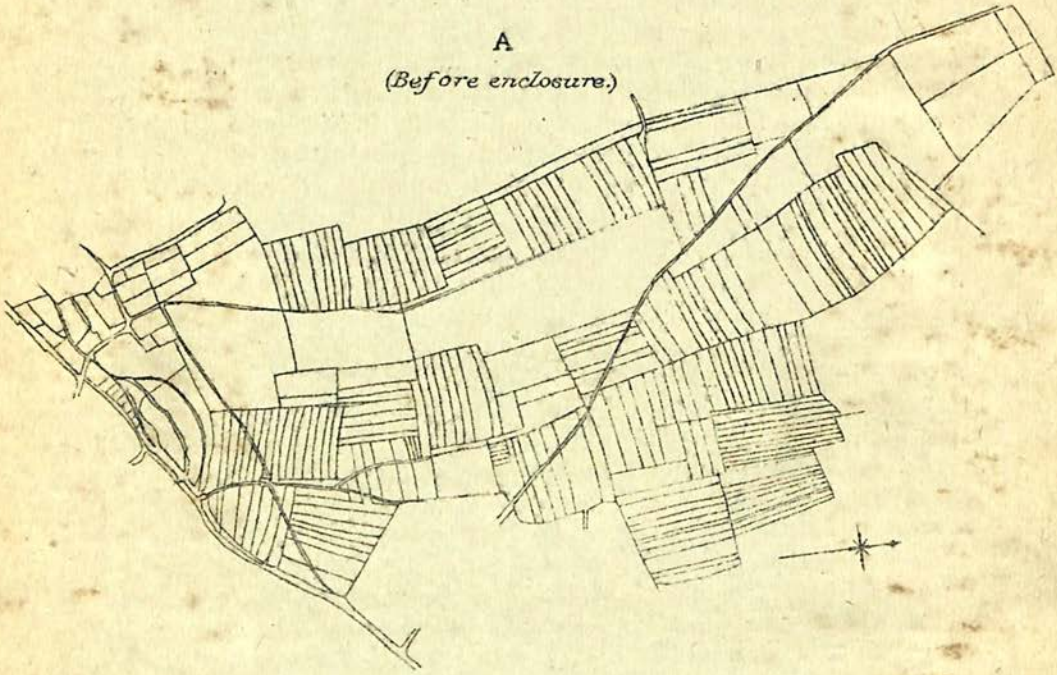
CONSOLIDATION OF HOLDINGS.

Field boundaries of an English Village before and after enclosure.

Not.—Similarity to Map of Punjab villages before and after consolidation.

A

(Before enclosure.)



B

(After enclosure.)

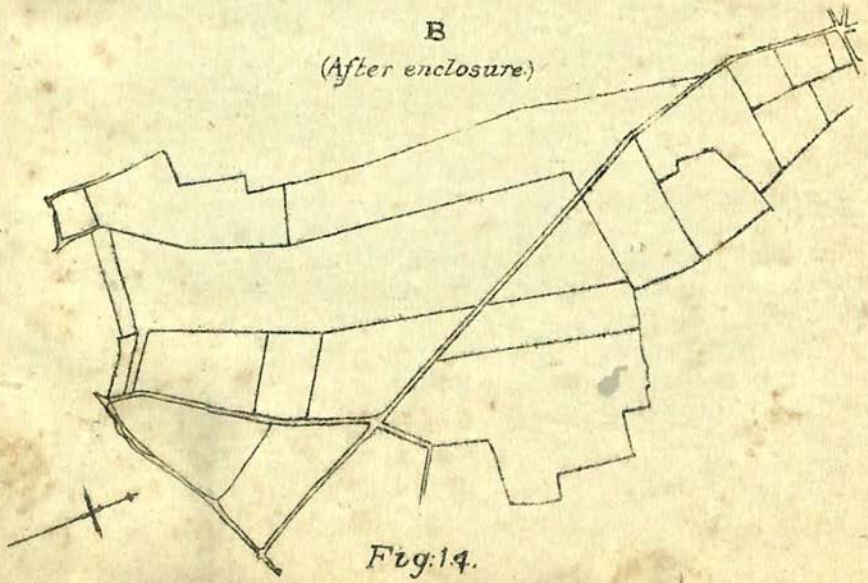


Fig. 14.

which took place (mainly) in the eighteenth century. It was not till scattered holdings had been united by means of enclosures (*fig.* 14) that English agriculture was enabled to free itself from the fetters of routine and convention. A similar object inspired a number of Punjab revenue officers commencing with Sir J. Wilson. By means of *killabandi* (*para.* 253) scattered holdings were united in canal irrigated lands ; and later the Co-operative Department undertook the work of consolidating holdings in other tracts. The actual work achieved is best illustrated by the map of a typical " consolidated " village (*figs.* 12, 13). The advantages of consolidation are emphasised by the appearance of the holding of one recalcitrant, who refused to agree to the scheme. It still remains in fragments. The recalcitrant repented, unfortunately too late. Comparison with the maps of an English village before and after " enclosure " is suggestive (*fig.* 14).

Advantages of consolidation.

236. The value of consolidation is obvious. In one village it has been possible to get rid of a guard (*rakha*) over the crops, thus saving a sum equal to a considerable proportion of the revenue charged on the land. In another village rents have increased for the compact blocks, as the tenants find these more easy to manage. In this village the consolidation has created parcels of land which can be irrigated from a well. Previously fields were on the average three-quarters of an acre in area, now the average is over four acres ; the former is too small to justify a well, the latter is large enough to make one profitable ; already six new wells are under construction . Another advantage discovered is that, with larger fields, there is much economy of canal water. To irrigate a number of petty scattered fields involves a waste of water as it has to be carried over a number of channels ; with a consolidated holding this source of waste diminishes. In another village it is proposed to plant fruit trees on portions of the new parcels of land. In some cases it has been found that the fields were actually too small to make cultivation worth the trouble involved, and were left untouched in consequence. This difficulty has now disappeared. In one village the owners, after consolidation had given them compact parcels, bought Meston ploughs. These ploughs are not handy for very small fields, but this difficulty disappears when the fields are large.

Difficulties overcome in effecting Consolidation of Holdings.

237. These changes are not easy to effect. The enclosures in England were carried through by special Acts of Parliament ; but the Punjab Co-operative Department relies on persuasion alone. And rural folk are notoriously conservative and averse to change. Of difficulties much could be written. Every owner fancies his ancestral plots are the best and dislikes the idea of exchange ; old men hate to be disturbed; minors require special consideration ; the very small owners see no advantage ; the bigger men have sometimes got more than they are entitled to and repartition would take this away ; mortgagees oppose any alteration, and occupancy tenants fear that their rights will be lost if their possession is disturbed ; some owners have migrated in search of work and their consent cannot be obtained. All these difficulties must be met and surmounted with patience and tact. Others are of a different order ; the village *patwari* sees his income from disputes, from copies for court use, and from other little sources threatened with reduction. He also fears that with compact holdings the number of *patwaris* will be reduced and his conscience suggests that, if the worst men are dismissed, he will not be a survivor. The higher revenue authorities have shown much interest in the work, and as success is achieved, this interest should grow. The most important feature about the work done is that it has been shown that consolidation can be carried out in actual practice ; the stage of discussion and opinion and pious resolution has been left behind. A beginning has been made, a small beginning perhaps, but still a beginning, which is better than none at all.

Rights of alienation.

238. While the unhampered exclusive use of property in a man's possession, whether ancestral or acquired, for his lifetime, with a free disposal of the income, is not denied in the Punjab, freedom of alienation whether by gift or bequest is, in regard to ancestral immoveable property, subject in most cases to certain restrictions. The prevailing sentiment is that as regards such property in the hands of any individual, there exists some sort of residuary interest in all the descendants of the first owner, or body of owners, however remote and contingent may be the probability of some among such descendants, ever having the enjoyment of the property. In short, the owner in possession is not regarded as having

the sole interest in the property and power to dispose of it, so as to defeat the expectations of those who are deemed to have a residuary interest. It is, however, recognised that in case of legitimate necessity the possessors of the residuary interest have no power to object to an alienation of ancestral immoveable property by the owner in possession.

Land Alienation Act.

239. In addition to the above-mentioned customary restraints on the full power of an owner to deal with property in his possession the Alienation of Land Act of 1900 restricts by statute the alienation of agricultural land in the Punjab. The fatal facility with which the agricultural tribes of the Punjab had got into the clutches of money-lenders, resulting in the course of time in the reduction in their status from proprietors to tenants, had long been marked and remedies for arresting this tendency had been discussed. The outcome of years of discussion was Act XIII of 1900, which limits the free transfer of landed property by persons who are declared to be members of agricultural tribes to members of the same tribe or of a tribe in the same group. Transfers of land by such people to others not so specified require the consent of the Deputy Commissioner, for whose guidance explicit rules have been laid down. The Act also places restrictions on mortgages to non-agriculturists. The original Act permitted free transfers to "agriculturists," an "agriculturist" meaning a person holding agricultural land either in his own name or that of an ancestor in the male line as an owner or hereditary tenant from the time of the first regular settlement of the district in which the land is situate or from such other date as Government may determine. This power was taken away by an Amending Act in 1907. The Act has been sympathetically administered, and has so far fulfilled the hopes with which it was framed. Opposed of course by the classes against whose acquisitive activities it was directed, it has been acquiesced in both because of its popularity with the preponderant agricultural population whom it protects from the effects of their ignorance and folly and also because of the opening of new spheres of investment in the development of which it has been the care of Government to assist. Fears that agricultural credit would be destroyed have proved groundless, and the price of land now stands far higher than ever before the passing of the Act.

Rights of pre-emption.

240. The great mass of the landed property in the Punjab is held by small proprietors, who cultivate their own land in whole or in part. The chief characteristic of the tenure generally is that these proprietors are associated together in village communities, having to a greater or less extent joint interests and, under our system of cash payments, limited so as to secure a certain profit to the proprietors, jointly responsible for the payment of the revenue assessed upon the village lands. It is an incident of the tenure, that if any of the proprietors wishes to sell his rights, or is obliged to part with them in order to satisfy demands upon him, the other members of the same community have a preferential right to purchase them at the same price as could be obtained from outsiders.

Punjab Pre-emption Act.

241. The recasting of the law of pre-emption was one of the corollaries to the passing of the Punjab Alienation of Land Act. The new law came into force as Punjab Act II of 1905, its chief aim being to prevent a non-agriculturist when he has once gained a footing in a village community from buying up other shares in the village as they come into the market and so expropriating the true agriculturist and breaking up the village community. The pre-emption law is admittedly unsatisfactory, and gives rise to abuses, particularly in the form of bogus threats by persons with rights of pre-emption to enforce those rights when a sale of land is in question. A considerable body of opinion is now in existence especially among judicial officers that the time has come to sweep away the whole system as an archaic survival no longer in keeping with modern conditions.

Origin of Land Revenue: The King's share of the produce.

242. The rulers, Rajas, and emperors of the successive governments in all parts of India have at all times raised the greater part of their State income by levying a charge on the land. This may have been an Aryan institution, or learned from the Dravidians, or a natural method adopted independently. But, as a matter of fact, it came to be an universally acknowledged principle, that the King, Raja, or chief of a territory had a right to a share in the produce of all cultivated land. In time, as might be expected, this revenue came to be no longer taken in kind, but in the form of a money payment, made at certain seasons when the harvests had been reaped.

Determination of the King's share.

243. The early authorities were naturally concerned only with discussing whether the King's share shall be a sixth, a fourth, etc. Nothing else was needed. It was early recognized that the share might be increased in time of war or special necessity, but that is all. As a matter of fact, while the Rajas are supposed to have taken no more than the sixth, it is quite certain that all or many of the later ones demanded the half. So tenaciously is old custom clung to in India, that in many Native States the ruler still takes his revenue in kind.

Conversion of grain shares into cash.

244. But when the time came for the Government (it happened under the Mughal rule) to change the grain-revenue into cash, the first idea was to estimate roughly the standard share as yielding so many 'maunds' of grain for each crop on each kind of soil, and then to value it at an average price. The early methods of fixing the grain value were, however, so rough that it was little more than an arbitrary process, effected with moderation, and with reference to the ability of the cultivators to pay easily. The change from a grain-revenue to a cash-payment had one important consequence. From that time forward it has been recognized as a general rule—certainly it was so by the Muhammadan governments—that the money-payment needed to be revised from time to time, *i.e.*, after the lapse of a suitable term of years. In the days of the later Mughal rule, the revenue was revised, not by any regular process of re-valuation, but by the expedient of adding on 'cesses' to the existing totals. These cesses were called by various names, which indicated either the name of the governor who imposed them, or the pretence under which they were levied.

Meaning of the term 'Settlement.'

245. But under our own Government such a device was not likely to be followed, at least not as a means of enhancing the land revenue. It became necessary, then, to devise some plan of fairly assessing the land revenue. The process by which the Government officials determine the amount of land revenue payable is called a Settlement (of land revenue); and the person or the body whom Government recognizes as entitled to be proprietor, subject to the revenue payment, is said to be 'settled with,' or to 'hold the Settlement.'

The Sikh Land Revenue system: Share of produce taken by the Government.

246. Under Sikh rule the Government share of the gross produce was assumed, as a matter of right, to be a clear half, while in the case of lands of peculiar fertility, with great facilities for natural irrigation, even more was taken. Instances were not uncommon where as much as 54 per cent. of the actual produce was recorded as the share collected by Government. In practice, however, this proportion was not often demanded. As a rule the public demand may be said to have varied from two-fifths to one-third of the gross produce. This proportion prevailed in all the districts which the Sikhs had fully conquered, and which were fairly cultivated. In less settled districts, where property was insecure and the cultivators distant from control, as in the Multan Province, and the Trans-Indus tracts, the revenue system pressed more lightly on the people. The Government share here never exceeded one-third, and usually averaged one-fourth or one-fifth, and touched as its lowest one-eighth. The system of collection in kind, though nominal and general, was not always invariable. Towards the close of Ranjit Singh's reign the revenue of a portion of the Punjab, generally in localities where the land was rich, and the yield secured by irrigation against vicissitudes of season, was assessed in money.

Sikh Revenue system: Method of assessment.

247. When the confederate "misls" or bodies of Sikh soldiery (*para.* 10) conquered the country, the different chiefs portioned out the whole into *taluqas*, or sections, under each chief. But afterwards the predominance of Maharaja Ranjit Singh resulted in the organization of the Punjab, much as the old Hindu State was organized. The most important part of the territory, held direct by the Maharaja, formed the *khalsa*, a term which still survives in Punjab Land Revenue parlance. The outlying tracts, the *ilaqas*, *taluqas*, or districts, held by the Muhammadan chiefs on the frontier, or by the Sikh chiefs in other parts, now became subordinate chiefs' estates, the holders being bound to the feudal service of the Maharaja, and to appear with the prescribed force of horse or foot when called upon. When the Sikh Government was strong, the *khalsa* territory was portioned out into large districts, with governors (called *Nazims*) over each; and over smaller divisions of territory—usually one or more of the old *taluqas*—a *kardar* or district officer was appointed,

with minor officials (*chaudhri*) over '*tappas*', or groups of villages, under him. Ranjit Singh had arranged fixed money assessments for every village, at least in some districts. But, as he grew old, the regular system was allowed to fall into abeyance; and for many years before annexation, the whole Province (up to the Sutlej) had been made into seven districts—Kashmir (including Hazara), Peshawar, Wazirabad, Multan, Pind Dadan Khan (including the Salt Mines), and Kangra (including part of Jullundur). The governors of these did what they pleased, farming the revenues to '*ijaradars*,' or contractors, or to the local *kardar*, getting as much (and paying as little to the Darbar treasury) as they could.

Early British Settlements.

248. The Punjab was fortunate in the early days of British administration in being able to utilise the experience gained in the best methods of revenue administration in the then North-Western Provinces, from which source the early Settlement Officers of the Punjab were partly obtained. Cash settlements of the land revenue demand had been made in some of the districts of the Punjab during the pre-annexation regency of the British Resident, and on annexation similar summary settlements were introduced throughout. These temporary arrangements were replaced as soon as possible by regular settlements on the same system as obtained in the Delhi districts, which had been placed under regular settlement by the Government of the North-Western Provinces before their transfer to the Punjab. A great deal of time and anxiety were expended in these early settlements over the determination of the various parties who had rights to the soil, and more particularly over the question of ownership. As a rule the cultivators were held to be the owners of the village lands, and were made responsible for the revenue: but in many cases, especially in the south and west of the Provnice, intermediaries were found who were held to have superior claims to the proprietary right. A further difficulty, which was occasioned by the system adopted of making a settlement with each village community separately, was the determination of the village boundary. This involved the question of the waste. In the Eastern and Central Punjab where the village system was strong the limits, within which the cattle of each community grazed, was known. These were defined, and all unoccupied waste

included within the boundary was treated as the common property of the owners. In Kangra the same policy was followed, and the waste became village property, except that the State's rights in certain valuable kinds of trees was reserved. In Kulu the waste has been retained as the property of the State. In the West Punjab the absence of a true village community involved the inclusion in one common boundary of the holdings of many heterogenous clans, and in the uplands of a large area of unoccupied waste. Even so the high unoccupied country in the western portions of the Bari, Rechna and Jech Doabs was retained by the State. In the Sind Sagar Doab the over-liberal admission of private rights in the vast unoccupied area of the Thal greatly reduces the facilities for the development by the State of canal irrigation, by which alone any great extension of cultivation is possible.

Three periods of Settlement Law in the Punjab.

249. The history of our Settlement procedure, as regulated by law, falls into three periods. (1) From annexation to 1871, during which 'the spirit' of the Regulations (VII of 1822, IX of 1833, etc.) was followed, supplemented by Circular orders of Government, some of which had validity as law, under the Indian Councils' Act, 1861. Others had the ordinary force of executive orders. (2) From 1871 to 1887, a Land Revenue Act (XXXIII of 1871) was in force. The Tenant Act (XXVIII of 1868) was also in force, having been enacted two years earlier. The Land Revenue Act was supplemented by published rules having the force of law under the Act. (3) In 1887 a revision of the Land Revenue and Tenancy Acts was completed, the law now being Act XVII of 1887 (with Rules issued under its authority), for Land Revenue administration, and the Tenant Law being Act XVI of the same year.

The Financial Commissioner's Standing Orders.

250. The Land Revenue Law is supplemented by rules having the force of law. Further orders were given in the Financial Commissioner's Circulars, later superseded by the Financial Commissioner's Standing Orders. These orders represent the accumulated experience of two generations of able Revenue Officers. They have the great merit that they can be modified when experience shews necessary without the need of a cumbrous legislative procedure. The Punjab land system as expounded in these acts, rules,

and orders can compare favourably with any in the world for cheapness and simplicity. It enables any purchaser of land to obtain, for a trifling sum, a complete history of the tenures of any piece of land since the British occupation.

Method of Survey.

251. The basis of a regular settlement is the preparation of a complete cadastral map and an accurate record of titles. The survey of estates is carried out by the village *patwaris*. The method now adopted in all plains tracts is that known as the square system of measurement. Before the plotting of the fields is commenced, the whole area of the estate is carefully marked out into squares of equal size, and the field map is filled in by plotting the distances of the corners of the fields from the sides and diagonals of these squares. It is found that the *patwaris* lay out the squares with fair accuracy, and the resulting field map is correct enough for all the purposes of the revenue administration.

Units of measurement employed.

252. The units of length and area have a primitive origin. The simplest way of measuring land is by pacing. When a man in walking steps out first with his left foot, the pace or *kadam* is the distance between the heel of the right foot in its original position and the heel of the same foot after it has been advanced in front of the left foot to complete the second step. A *kadam* is the usual unit of measures of length and a square *kadam* the unit of measures of area. In the east of the Punjab, where the *bigha* is the local measure, the square *kadam* is known as the *biswansi;* in the west, where the *ghumao* is employed, it is known as the *sarsahi*. Twenty *biswansis* make a *biswa*, and twenty *biswas* a *bigha*. Nine *sarsahis* make a *marla*, twenty *marlas* a *kanal*, and eight *kanals* a *ghumao*. The *bigha* of the Western Punjab is one-half of a *ghumao*. As the average height of a man in different localities varies greatly, it is not surprising that the local measures in use were found to be far from uniform. The variations have been reduced, but not abolished, in our settlement surveys. The *bigha* employed in some settlements in the east of the Punjab is 5/24ths of an acre. It is usually known as the *kachcha bigha*, to distinguish it from the old Mughal measure known as the *shahjahani* or *pakka bigha*, which is exactly three times as large. Where the *shahjahani bigha* is the unit of area the linear measure is not the *kadam*, but the *gatha* of 99 inches. The *kadams* in use vary from 5½

to 66 inches, the latter being the most usual length. It is also the most convenient, for, where it is employed, the *ghumao* is exactly equal to an acre.

Killabandi.

253. Upon the construction of the Lower Chenab Canal and opening of the waste lands in the Rechna Doab to colonisation, it became necessary to adopt a unit of grant and the *patwari's* survey square of 27·7 acres was selected: the vast area was demarcated into such squares and the irrigation arrangements provided a water-supply for each square capable of allotment. It was intended to allow the grantee to arrange his fields as he pleased within his grant, but a lucky chance led to the issue of orders that all squares should be divided into 25 sub-squares which thus contain an area of 8 *kanals* 18 *marlas* or one acre and 18 poles. The manifest advantages of this system led to its immediate acceptance, and the sub-squares were called *killas* and the system *killabandi*. *Killabandi* has been adopted in the Lower Jhelum Colony, and is being introduced on the canals of the Triple Project in Gujrat, Gujranwala and Montgomery districts, but in place of the survey square a rectangle of 1,100 × 990 feet containing 25 acres has been adopted providing *killas* of one acre each, and thus avoiding the calculation of all rates in terms of *killas* as well as of acres. One of the advantages of *killabandi* lies in the simplicity of the mapping work required for the cadastral map, which then, to a large extent, consists of straight lines drawn across the map: and in the consequent ease with which the map can be kept up to date. This is fully recognised not only by the record staff, but by the cultivators themselves, and led to the introduction of *killabandi* into proprietary areas irrigated by the Lower Chenab and Lower Jhelum Canals. Here *killabandi* involves a complete re-partition of the village area according to the share of each proprietor. This is simple enough in the large estates in the uplands with few owners and much waste land, but in the lower and more developed villages towards the rivers, entails a considerable amount of minute attention to detail. The advantages of the completed work are, however, so patent that the trouble of the re-arrangement has been cheerfully acquiesced in: and the system is being introduced into proprietary areas on the canals of the Triple Project. An experiment on the same lines on the Western Jumna Canal area in Karnal was not popular with the more conser-

vative owners of the south of the Province and was therefore abandoned.

Records.

254. The record of title is known as the "*jamabandi*" or register shewing the distribution of the revenue, a function which it still performs. Each field has a separate number given to it which is shewn on the field map: and each plot of land lying in one spot in the occupation of one person or of several persons holding jointly and held under one title is ordinarily measured as a single field. In the *jamabandi* the fields in each estate are grouped by proprietary holdings (*khata khewat*), and within each proprietary holding by cultivation holdings (*khata khatauni*). A revised edition of the *jamabandi* is prepared for each estate every fourth year.

Mutation and crop registers.

255. The most important subsidiary registers which are necessary to keep the *jamabandi* up to date are the mutation register, in which changes in proprietary ownership and hereditary tenants are shown, and the crop inspection register (*khasra girdawari*), in which, besides the record of the crop grown each harvest in each field, changes in cultivating possession are also indicated. When a Revenue Officer visits a village he attests the mutations recorded in the mutation register, passing an order that they are accepted or rejected; and only the changes sanctioned by the Revenue Officer in a formal mutation proceeding are incorporated in the revised *jamabandi*.

The crop inspection register follows the order of the field numbers, no attempt being made in it to group the fields belonging to one proprietor together. A crop inspection is made by the *patwari* for each harvest. The *patwari* notes against each field the crop grown, and any changes in the cultivating possession which have occurred. In this way accurate crop statistics for each harvest are obtained, and any changes which have occurred in rights or possession or field boundaries are brought to light.

Village Note-Books.

256. The records thus prepared, besides their value in the revision of the *jamabandi*, form the basis of the statistical note-books which are prepared for each village. These note-books are arranged so as to enable the *patwari* to keep a continuous record of the statistics relating to each village during the

course of the settlement. The statements kept up are the following :—

(*i*) The yearly register of area, showing for each year the total cultivated and uncultivated area, the class of cultivation with reference to the means of irrigation and the number of wells in use.

(*ii*) The crop returns of each harvest, showing the matured area of crops of different kinds at each harvest.

(*iii*) The yearly revenue account.

(*iv*) The yearly total of areas transferred, classified according to the nature of the transfer.

(*v*) A quadrennial abstract of ownership, mortgages and revenue assignments.

(*vi*) A quadrennial abstract of cultivating occupancy.

(*vii*) The statement of prevailing rents.

(*viii*) Statistics regarding the number of agricultural stock and carts and ploughs.

Similar books are kept in the *Tahsil* and District Offices.

Accuracy of records.

257. The present system of "annual" record and preparation of statistics is associated with the name of Colonel Wace, to whose initiative the reforms introduced from 1885 onward are due. It was the previous policy to undertake a revision of the map and record only when each district came under revision of the assessment. One of the objects of the reforms in land record work then introduced was to entertain a village record agency capable of maintaining up to date the village field maps and record registers, and thereby to obviate the necessity for general revisions at settlement. That the records are maintained in a high state of efficiency is shown by the confidence placed in them by landowners and by the decreasing resort to written deeds and the registration procedure, where a mutation will suffice. The effect of the reforms has in recent years been tested at the revision of the settlement of the districts which have been settled under the new system. It has not been found possible to do away with the special revision entirely, though a greatly simplified process can be employed and map correction substituted for complete remeasurement.

The attention directed to the comparative failure of the 1887 réforms led to the issue of fresh instructions having for their object the greater accuracy of the annual record work, and in particular of the supplementary maps, required to record changes in field boundaries and numbers. Now that the office of Settlement Commissioner has been abolished, the Director of Land Records has been associated with the record and mapping work in settlements, and a want of continuity in control which formerly obtained has been avoided. The amalgamation on one cadre of settlement and district staffs of revenue subordinates is a further step calculated to assist to remove the distinction between ordinary and settlement record work. The amount of record work performed in the province may be guaged from the fact that on the average in each district between 27,000 and 28,000 mutations are attested in the year.

Settlements.

258. With the exception of a few estates of which the revenue has been redeemed by the proprietors under a policy long since abandoned, the village assessments are revised from time to time, the term of settlement being usually thirty years in the case of fully developed districts and twenty years where conditions are less advanced. Reassessment has, hitherto, as explained, usually been accompanied by a special revision of the records, though the processes are quite distinct; and a general revision could not at one time be undertaken without the sanction of the Government of India. The rule laying down the standard of assessment is as follows:—"The assessment of an estate will be fixed according to circumstances, but must not exceed half the value of the net assets," a phrase which is defined as meaning "the average surplus which the estate may yield after deduction of the expenses of cultivation, including profits of stock and wages of labour." When the rents are fair competition rents, 50 per cent. of the rental is considered to be the measure of the half assets share of rented land and the rates ascertained from these rents for all classes of soil are applied to the whole cultivation, whether by tenants or by the owners. The ascertainment of the rental is a comparatively easy matter with our present records wherever cash rents prevail, but considerable difficulty is encountered in converting produce rents into a cash rate. The area of each crop is of course known, but estimates have to be made of the outturns of each crop, the actual share received by

the landlord and the prices obtained by him for his produce ; all of which, owing to the uncertainty involved, are probably usually under-estimated. In practice, it is recognized that there are many reasons which may justify a Settlement Officer in assessing below the maximum standard, but he is required to state as accurately as possible what the half net assets are, and to give good reasons for any proposal to fix the Government demand much below that standard. No particular fraction of the *gross produce* is prescribed as the limit of the land revenue demand, the only limit being that just mentioned, *viz.*, half the value of the net asset. The actual assessment nowhere exceeds one-fifth of the gross produce. It is more often equal to one-seventh, one-eighth, or even a smaller fraction. There is a marked tendency in the recent assessment policy of the Punjab to assess irrigation from wells with greater leniency than before, in consideration of the expenditure of capital and labour in constructing and working the well, and very liberal rules are now in force postponing the full assessment on new wells for a term of years and remitting part of the demand when the well falls in. Whether for cash or produce rent areas the present practice is for the Settlement Officer to submit his assessment proposals in a report (dealing usually with a *tahsil*), through the Commissioner to the Financial Commissioners, who pass the necessary orders. These, after they have been submitted to Government for confirmation, are communicated to the Settlement Officer for compliance.

Fixed and fluctuating assessments.

259. The usual form of demand is an assessment fixed for a term of years and realisable (subject to suspensions and remissions) in good and bad years alike, but systems of fluctuating assessments, under which the harvest demand is ascertained by the application of sanctioned rates to the harvest area, have long been a feature of Punjab land revenue administration. Much progress has been made in recent years in the simplification and improvement of the rules under which fluctuating assessments are carried out and large areas are assessed in this way, especially in the west of the province. The areas under fixed and fluctuating assessment are now 39 and 17 million acres respectively ; but this hardly represents their relative importance, as much of the area under fluctuating assessment is waste, and brings in very little revenue.

Settlement policy of the "Reformed" Councils.

260. The Settlement procedure described above is based on the experience of the able Revenue Officers who have worked in the Province since annexation. Improvements have continuously been made in matters of details, but the main outlines of Settlement policy and procedure have remained unchanged. With the advent of the Reforms, however, a change in the point of view has been increasingly evident. The large landowners have a majority in the Council. Land revenue is a reserved subject, but the not unnatural desire of this majority to lessen the burden of direct land taxation and increase, if necessary, the taxation of the urban population has been clearly indicated. Committees consisting of members of the Council have sat to consider general questions such as Retrenchment, and also more particular problems such as the working of the Inundation Canals in the Multan district, and the revision of an important chapter in the Land Revenue Act. The results of these deliberations have not yet been published, but leaders of the community have exchanged views and experiences with expert civil servants, with mutual advantage. The financial stringency which coincided with the advent of the Reforms has moreover entailed a reduction in Settlement establishment. This will necessitate closer attention from Revenue Officers in order to secure that the essential records on which reassessment depends are maintained accurately by the permanent staff. Political problems, however, render it increasingly difficult for district officers to exercise the increased supervision necessary, which is mainly furnished by the Director of Land Records and his staff.

Endeavours made by the Land Revenue Department for the economic uplift of the rural population.

261. Apart from its routine activities the Land Revenue Department is devoting itself to advancing the prosperity of the rural population in two special directions. In conjunction with the Drainage Board (*para.* 204) and the Irrigation Department a campaign has been undertaken against water-logging. To this must be added the reclamation of the Siwalik range of hills and the reafforestation of not dissimilar areas of low hills and ravines in other parts of the province. This is a difficult task, but one in which it is hoped that a policy of patience will be crowned with success. As the result of discussions in the Legislative Council it has been decided

to concentrate on an intensive policy, and to treat two small areas at each end of the Siwalik range by way of demonstrating to the villagers the benefits of reafforestation and closure. It is intended that all extensions of these operations in the Ambala district should depend on negotiations with the people; and, in order to popularise the scheme, an agreement has been made with villagers that they shall receive one-half of the value of the produce, after deducting the cost of upkeep. It is believed that a few years' intensive labour will suffice to convince both legislature and people of the value of reclamation, and that by these means opposition will be overcome, and the people induced to act energetically in their own interest.

The Land Revenue Department: The Financial Commissioners.

262. A Financial Commissioner was appointed as chief authority in the Revenue Department on the abolition of the Board of Administration in 1853: and in 1865 a Settlement Commissioner was added to control settlement operations under the Financial Commissioner. One of the changes introduced in 1884 was the abolition of the Settlement Commissioner and the appointment of a 2nd Financial Commissioner. In 1897, however, the old arrangements were reverted to and the appointment of Settlement Commissioner was revived in place of the 2nd Financial Commissionership, in order that adequate supervision of settlement and colonisation operations might be secured. In 1910 it was found advisable to make a further change. The Settlement Commissionership was again abolished, and a 2nd Financial Commissioner again appointed. The appointment of Excise Commissioner and Superintendent of Stamps was abolished at the same time, and control over both settlements and excise administration was to some extent entrusted to the Commissioners of divisions. The Financial Commissioners besides being the highest Court of Revenue jurisdiction, as already explained (*para.* 102), are the Heads of the Departments of Land and Separate Revenue and of Agriculture, and control the Director of Agriculture, the Director of Land Records, the Registrar of Co-operative Credit Societies, and, in his relations with the agricultural and pastoral population, the Conservator of Forests. The Financial Commissioners are also the Court of Wards of the province. In addition to their work as Heads of Departments the Financial Commissioners

are now Secretaries to Government also in these departments, and are designated as Financial Commissioner, Revenue Secretary, and Financial Commissioner, Development Secretary, respectively. The Financial Commissioner, Development, is Secretary to Government in all Forest cases, whether dealt with by him as Head of a Department or not.

The Commissioner and Collector.

263. In all matters connected with land, excise, and in income-tax administration the Commissioner and Deputy Commissioner are subject to the control of the Financial Commissioners, who are also the final appellate authority in revenue cases. As chief district revenue officer the Deputy Commissioner's proper title is " Collector ", a term which indicates his responsibility for the realization of all Government revenues. In districts which are canal irrigated the amount is in some cases very large.

The Collector's Revenue Subordinates.

264. The chain of executive authority runs down to the *Tahsildar's* assistant or *naib* through the Commissioner and the Deputy Commissioner, the *Tahsildar* being directly responsible to the latter. The Assistant and Extra Assistant Commissioners are the Deputy Commissioner's Assistants at headquarters, and as such are invested with powers in all branches. When invested with revenue powers, they are known as Assistant Collectors. They are often invested with some of the powers of a Collector. The *Tahsildar*, a very important functionary, is in charge of a *tahsil*. He is linked on to the village estates by a double chain. The official one consists of the *kanungos* and the *patwaris* or village accountants whom they supervise; the non-official of the *zaildars* and village headmen who are also the intermediaries between the revenue and police staffs and the villages.

The tahsil.

265. The *tahsil* is a sub-division of a district, and is of primary importance in the Punjab. The Mughal *pargana* is still remembered in some parts, and is found convenient to refer to locally in reports, but ordinarily the *parganas* were confused with the Sikh *taluqa* or *ilaqa* ; and moreover they never had much, if any, value in the northern districts, where we have the *ilaqas* of tribes. Consequently, the *tahsil* is a more convenient administrative unit, larger than the *pargana*, and so disposed that ordinarily about four of them comprise a district.

Tahsil administration.

266. At the headquarters town is the *tahsil* treasury and office; and here local payments are made by the village headmen, and local revenue petitions are presented. Some of them are disposed of, and others are reported on for the orders of the Collector. The *Tahsildar*, as his name implies, is the officer in charge of such *tahsil*, and, as he has local control, he is (necessarily) vested with the powers of a Magistrate (*para.* 101), so that, though he is not expected to try magisterial cases in any great number, he may have the prestige and the authority of a Magistrate to act in case of need. A good *Tahsildar* is well versed in Revenue details, and has an intimate knowledge of the people in his *tahsil* as well as of the condition of the estates in it, and of the peculiarities of climate and agricultural conditions under which land management is carried on. He is constantly in camp, and is therefore assisted by a *naib* or Deputy who has similar, but lesser powers, and who so arranges his movements that he is at *tahsil* headquarters when the *Tahsildar* is away.

Revenue Duties of the *Tahsildar*.

267. The number of officers of this class for the whole Province is sanctioned by Government; but the appointment, posting and control of the staff rests with the Financial Commissioner. The Financial Commissioner's Standing Orders also give directions as to the *Tahsildar's* inspections and camp movements; his especial attention being directed to checking the record of changes in proprietary and occupancy holdings, and to the harvest statistics; while his camp tours also afford special opportunities for dealing on the spot with partition cases, and with matters connected with *lambardars'* appointments, and cases of lapse of revenue assignments.

The Land Records Department.

268. The Director of Land Records is purely an inspecting and advising officer; the Land Records establishment, the *patwari* and *kanungo* agency being under the control of the Deputy Commissioner of the district. The Director supervises and inspects the village records of every district and the statistical records of *tahsil* and district offices connected therewith, and supervises and inspects the *patwari* and *kanungo* agency of the Province. On all matters of

detail connected with these subjects the Director's recommendations are accepted as those of an expert specially charged with duties of a technical character. He has two Personal Assistants; one of these posts has, recently, however been kept vacant in order to see whether it can be safely abolished.

The *patwari*.

269. The *patwari* is an inheritance from the village system of old days. He is appointed for a circle consisting of one or more villages, and is under section 3 of the Land Revenue Act a "village officer" and not a Government servant. *Patwaris* were formerly paid from a cess on the land revenue, but in 1906 the State took over the charge and abolished the *patwar* cess and with it the *patwar* fund. The *patwaris* are arranged in three grades usually drawing Rs. 20, Rs. 23 and Rs. 26 per mensem, and their appointment is non-pensionable. In addition to keeping up the records entrusted to his charge, the *patwari* is required to report to the *Tahsildar* any calamity affecting the land, crops, cattle or the agricultural classes, and to bring to notice alluvial and diluvial action of rivers, encroachments on Government lands, the death of revenue assignees and pensioners, progress of works made under the Agricultural Loans and similar laws, and the emigration or immigration of cultivators. He is expected to be ready to make surveys and field inspections, and to aid in relief of agricultural distress and in elections. It is his duty to allow any one interested to inspect his records, and he has to supply extracts from them on receipt of fees, for which a scale is provided. When revenue collections are in progress, he must furnish any information that may be required to facilitate the collections, but he himself is not permitted to take any part in the collection of the revenue. He may be called upon, under certain circumstances, to make maps to illustrate Police enquiries in cases of serious crime.

The *kanungo*.

270. The *patwari* is under the immediate supervision of a circle supervisor known as the *kanungo*, the title of the old Muhammadan institution being thus retained. *Kanungos* are recruited to the extent of two-thirds of their numbers from *patwaris* of at least three years' service; the rest are selected. The qualifications required in the latter case are—

the educational test of having passed the Entrance examination of the Punjab University, the age limit of being under 25 years old when accepted, and a practical training by at least two years' service as a *patwari* or an apprentice *patwari*. All *kanungo* candidates are required to pass a departmental test and to obtain a certificate of efficiency from the Director of Land Records before they are confirmed in the appointment. *Kanungos*, known as *tahsil* office *kanungos*, are placed in charge of the records at the *tahsil*.

The District or *Sadr Kanungo*.

271. In each district there is a District or *Sadr Kanungo*, a promoted *kanungo*, who is of sufficient status to be eligible for admission to the register of *Tahsildar* candidates. The District *Kanungo* is the inspecting officer of the land record work of the district, both in the field and in the *tahsil* offices. He himself maintains the statistical registers relating to the whole district and is responsible for the custody of all land records filed in the district office. The responsibility of the *Tahsildar* and his *naibs* for the inspection and correctness of the work of the *kanungos* and *patwaris* is, however, not affected by the duties of the district *kanungos*. The *kanungos* are inspected by the *Tahsildar* and his deputy, who are expected to verify the crop entries field by field in estates subject to the fluctuating system of assessments, and 25 per cent. at least of the entries made in the record of titles of each estate. The Revenue Assistant, usually a member of the Provincial Service, specially charged with the work, sees that this duty is carried out properly and efficiently.

Court of Wards.

272. Up to the year 1903 the management of wards' estates was provided for by the Punjab Laws Act (IV of 1872) (*para.* 141) under which the Deputy Commissioner of each district was his own Court of Wards with very little in the nature of law to control his action. Under Punjab Act II of 1903 the Financial Commissioner became the Court of Wards, and, among other provisions, authority has been taken for dealing with claims on encumbered estates, and it is now possible to retain estates under management on the ward coming of age. The tendency in this branch of the administration is to restrict Government intervention to the least

possible. Act VIII of 1890 provides a suitable procedure for the appointment of private persons as guardians to minors and the Land Alienation Act provides protection against permanent expropriation of landed interests. There is accordingly less necessity for official interference with the management of private property than heretofore.

CHAPTER XI.

THE PUBLIC WORKS DEPARTMENT.

Importance of Communications: Roads.

273. Of all requisites to prosperity, perhaps the most indispensable is a well-developed system of communications. Throughout the whole of the Punjab's history, the difficulties of communication have exercised a preponderating influence upon her political as well as her industrial development. These difficulties, despite railways, telegraphs, motor-transport, and other expedients, undreamt of in olden days, still persist as a formidable obstacle to the progress of modern industry. Unceasing effort and expenditure upon a scale hitherto impossible will be necessary if communications, whether by road or by rail, are to be adequate to the requirements of the Province. The necessity for extending communication by road is becoming every year more apparent. At present the economic loss caused by the inaccessibility of many agricultural districts in the rainy season is considerable; and this cannot be remedied until the system of trunk roads is developed. The progress which is being made year by year, while by no means negligible, is inadequate for the necessities of the country. But the present position can only be understood by a review of the development of communications in the Province in the past.

Early Trade Routes; through (1) Hindu Kush, (2) Persian Gulf, (3) Red Sea.

274. Cut off from the north-east by an impenetrable mountain barrier, the bulk of India's trade has always been with countries lying to the west, and a trade route was gradually developed between the Indus and the Caspian and Black Seas by the way of the Hindu Kush and the Oxus. The natural difficulties of the route must however have limited the trade to valuable articles of small bulk. A second great trade route originated in the seventh century B. C. when traffic by sea sprang up *via* the Gulf, whence caravans found their way through Mesopotamia to Syria and Egypt—rice, sandal wood, and peacocks going by this route to Europe. The discovery by Hippalus (circ. A D. 47) of the possibility of using the regular monsoon winds opened out a third route, *viâ* the Red Sea, and gave a great impetus to trade ; India exporting spices, muslin and other cotton goods, as well as precious stones, in exchange

for metals, coral and cloth. The first of these three routes, that to the north by way of the Oxus, was seldom of great importance to India, though, when the second or Syrian route was temporarily closed on account of the Crusades, it did enjoy a period of considerable prosperity, thanks to the care of Genoese traders, and its junction with the ancient road between China and Europe. It brought much wealth to the Byzantine emperors, till the taking of Constantinople by the Turks in 1453 stopped the flow of trade and closed the route. The Syrian caravan trade, which had thriven under the Arabs, ultimately shared the same fate, and early in the sixteenth century the conquest of Egypt placed the command of the last overland route to Europe, which had been developed by the Venetians, in the hands of the Turks.

Punjab trade route down Indus *via* Multan.

275. It was of course by way of the Indus that the trade of Northern India, after passing through Multan as one of its principal marts, found its way down to the coast, to serve the Syrian and Red Sea trade routes mentioned above. But as with the roads, so with the rivers, the route that could be used for trade could equally well be used for plunder and warfare, and when the pirates of Dewal or Debal (the modern Karachi) attacked a vessel carrying presents from the King of Ceylon to Khaliph Walid, it was by the Indus that the Khaliph's army, under the ill-fated Muhammad Kasim Sakifi, after punishing the pirates, passed up in 714 A. D. to capture and plunder Multan.

The two trade routes from India to Central Asia passing through the Punjab.

276. Two great trade routes from Central Asia passed into the Punjab across the Indus; one which crossed at Dera Ismail Khan and proceeded *viâ* Mankhera, Shorkot and Harappa meeting the other, which crossed at Dera Ghazi Khan and proceeded *viâ* Multan, at Pakpattan, once the "Ferry of the Pure" over the Sutlej. This is said to have been the point where Mahmud and Timur crossed the river, from which it is now ten miles distant. The former route was followed by the Povindahs, a mixed Pathan confederacy of travelling merchants, half traders, half soldiers, having their headquarters at Dera Ismail Khan. They travelled in large "*kafilas*" of several hundred camels, and four or five thousand souls, and brought the produce of Afghanistan, Samarkand and Bokhara down

the Gomal Pass. They readjusted their loads at Dera Ismail Khan, where they left behind the old men to look after their wives and families, and the weaker beasts and those with young to graze during the winter on the vast sandy stretches on either side of the river. They then marched their camels to Delhi, Agra and even Calcutta, to exchange their wares for cottons, chintzes, velvets, tea, spices, medicines, etc., returning before the hot weather set in.

Trade route to Tibet.

277. Last among the old routes established primarily for trade must be mentioned one in the extreme north of the Punjab, by which caravans passed from Kashmir to Cathay (China) through Tartary, carrying musk, china wood, rhubarb, jade, crystal and Tibetan wool, till, as Bernier relates, Shah Jehan's invasion of Tibet made the king of that country realise that a trade route was a dangerous possession, so that he closed his country to all intercourse with Kashmir.

Development of communicarions by Sher Shah Sur, King of Delhi, 1543 A. D.

278. Sher Shah Sur, one of the ablest administrators who sat on the throne of Delhi, was also the first to recognise the advantage of improved means of communication. About 1543 A. D he made a road from the coast of Bengal to his great fort at Rohtas, north of Jhelum, on the way to Kabul, and also one from Lahore to Multan. Along these roads he built serais, ten *kos* apart, each with its separate accommodation for Hindus and Muhammadans, with pots full of drinking water at the gate, and Brahmins to provide hot and cold water, beds and food, for Hindu travellers, and grain for their horses, all at Government expense. Each serai had also a well and mosque with an *imam* and a *mua'zzin*, while two horses were kept ready for the royal couriers.

The Moghal roads.

279. Sher Shah's work was short lived, as his serais were built only of mud. Profiting by the lesson the Moghal Emperor Jahangir ordered spacious and substantial serais of brick or stone to be built eight *kos* apart, which should be secure against early decay, while baths and a tank of fresh water were to be installed in each, with attendants to keep them clean. At the passage of every river, whether large or small, a convenient bridge was erected. Trees had already been plant-

ed on both sides of the road from Agra to Attock, and he then ordered the construction of a line of *kos minars*, from Agra to Lahore, and also a well every three *kos*. These *kos minars*, 20-30 feet high, may still be seen about 2½ miles apart at intervals on the old Royal Road. The Moghal roads were, however, mere fair-weather tracks, level with the country, and demarcated with lines of trees, of which the Moghals fully appreciated the value, with tall *minars* dotted through the jungle to indicate the way from stage to stage, and to mark the distance. The gateways at Gharaunda and Nurmahal, as well as the Arab Serai in Delhi, the Akbari Serai at Shahdara, and the Begum-ki-Serai at Attock, all mark the old Moghal road to the north, while the Losar Baoli is a fine specimen of their wells. The bridges resembled a great barrier, perforated with numerous small pointed arches, affording considerably less waterway than the area of obstruction presented by the massive piers, which were founded on shallow wells and supported a continuous floor.

Decline and fall of the Moghal Empire: Decay of their road organisation.

280. During the troublous times which accompanied the decline of the Moghals their roads appear to have been allowed to fall into decay, and it was only in 1818 that spasmodic efforts began to be made by the British to improve the country tracks in Bengal with convict labour, while the surplus ferry funds were assigned to the same purpose. But even in 1830 the roads outside a radius of twenty miles from Calcutta were mere fair-weather tracks, and as late as the forties Government despatches were still carried on men's backs, at four miles an hour, to Delhi and Agra. In the Punjab, prior to annexation, the roads appear to have been in an appalling state. Mr. French, who accompanied the Earl of Auckland on his visit to Ranjit Singh in Lahore in 1838, writes in his journal that on the route they followed through Ferozepore to Amritsar the road was often lost amidst the brushwood, while when travelling from Lahore to Delhi he notes that "the roads were as bad as they generally are in the Punjab, and it would be highly creditable to the Sikh Government if an improvement in the means of inter-communication were established, means which are shamefully neglected by a wealthy ruler."

British annexation of the Punjab: Improvement of communications.

281. One of the earliest works undertaken after annexation by the Board of Administration (*para.* 24) was to encourage commerce by improving communications, and by sweeping away the numerous custom duties in force under Sikh rule on all articles of foreign produce, as well as the internal transit duties and many excise imposts. It was also felt that roads would be more efficacious than bayonets in preserving the tranquility of the country. Accordingly the early years after annexation marked a great development in the internal communications of the Province. The first Administration Report mentions that the Grand Trunk Road from Lahore to Peshawar, along which the army of the Punjab was massed, and on which the Most Noble the Governor-General had been pleased to bestow his special attention, had been traced, surveyed and put well in progress, while the metalling of the section from the Beas to Lahore had been completed in 1853.

Formation of the Public Works Department.

282. The control of all public works in the Punjab Proper, including the defensive work on the Trans-Indus frontier, had been vested in a Civil Engineer, a title which gave place to Chief Engineer in 1854, when his functions were expanded to embrace the control of all engineering works, whether civil or military, financed from Government funds, in the territories administered by Sir John Lawrence, who in February 1853 had been appointed Chief Commissioner on the abolition of the Board of Administration. The Punjab was as fortunate in its first Chief Engineer as in first Chief Commissioner, and Colonel Napier's successful administration formed the model for the establishment of a Public Works Department in every province under the newly constituted Public Works Secretariat, when the Military Boards were abolished in 1854-55.

Early road policy: Strategic considerations.

283. Like the Romans, both Sher Shah Sur and the Moghals built their roads so that they could quickly move to strategic points in the event of a hostile invasion or of an internal rising. Similarly the first roads of the British converged on Karnal, the frontier post whence watch was kept on the Sikh States. The establishment of the Ludhiana

Cantonment in 1809 meant opening out the road *viâ* Ambala and Sirhind which was subsequently extended to Ferozepur, the second cantonment guarding the Sutlej. Sir David Ochterlony's expedition against the Gurkhas in the Simla hills in 1815 presumably meant an extension from Ambala to Bar, which preceded Kalka as the starting off point for Simla. A map of the protected Sikh States of pre-annexation days prepared for the Quarter-Master General's Department about 1840 shews a second route from Hansi, through Jind, Patiala, and Mani Majra, to Bar, in addition to a direct route from Ludhiana, through Morinda and Kharar to Mani Majra. After the second Sikh war the same policy was followed. Security was the first consideration, and a road was rushed through to the Khyber, the gate to India, through which more than one hostile horde had poured. Cantonments were established at Lahore, Wazirabad and Jhelum, strategic points, where the road crossed the great rivers; and at Rawalpindi, which was a convenient point to reinforce either Peshawar or the forces kept on the Hazara frontier ; while a string of outposts was established all along the border from Kusmore in Sind to Peshawar and the Kaghan Valley in Hazara. These were connected with one another and with their bases at Dera Ghazi Khan, Dera Ismail Khan, etc., by sufficiently good roads, and these in turn were connected with the cantonments in the rear. This road system sufficiently satisfied the military and trade requirements of the day.

Railway feeder roads.

284. The development of railways necessitated the construction of feeder roads, but it was early recognised that the old type of fair-weather road, which served sufficiently as long as it was merely needed for the transport of the harvests, which coincided with the drying up of the rivers, would not suffice in connection with trains running with equal regularity at all seasons, and that all such roads would have to be bridged and metalled in order that full advantage might be taken of the facilities offered by the railways.

Local Self-Government: unsystematic development of communications.

285. The measures of local self-government initiated by Lord Mayo in 1870, and developed by Lord Ripon (1881-84) and his successors, have afforded considerable possibilities for the development of communications. But the funds at

the disposal of local bodies have been limited and their interests restricted. They have therefore not unnaturally confined their energies to their own parochial needs, without a thought for their neighbours, so that in most districts a group of metalled roads is to be found radiating from headquarters, while the railway is often the one means of communication with the neighbouring districts as well as with the outside world.

Realisation of the value of roads: The Board of Communications.

286. With the growth of railways arose the idea that roads were unnecessary and unprofitable, and for this reason also road development was neglected during the latter half of the nineteenth century. So far indeed did this feeling go that the Delhi-Rohtak road was cut up in several places so as to drive traffic on to the railway. But with the twentieth century came a reaction. The value of feeder roads had been always recognised, but the advent of motor transport led to an appreciation of the value of through highways. In 1918 a Road Board was created as a war measure. With its termination on the cessation of hostilities, the Provincial Board of Communications was created in its place to consider questions of the development of communications whether by rail, by road, by water or by air. Two engineers, a Quarry Engineer and an Agricultural Tramway Engineer, were appointed, the former working the development of quarries in the province with a view to meeting the steadily growing demand of stone metal, and the latter investigating the possibilities of tramways in the Punjab.

Present road system: Metalled roads.

287. Road communications are now far less extensive and connected than the railway system; the only coherent system of metalled roads is that connected with the Grand Trunk Road which runs continuously from Calcutta to Peshawar and in its passage through the Punjab connects Delhi, Karnal, Ambala, Ludhiana, Jullundur, Amritsar, Lahore, Gujranwala, Jhelum and Rawalpindi. This road is metalled throughout its length and has recently been much improved by the construction of road bridges over the great rivers of the Punjab, all of which it crosses. Metalled feeder roads branch off from the Grand Trunk Road for short distances throughout its length, the most important being

RAILWAYS AND ROADS.

PUNJAB, 1923.

NOTE.—1. Grand Trunk Road from Delhi to Attock, and lack of other through roads.

2. Railway system is mainly parallel to lines of rivers owing to expense of bridging.

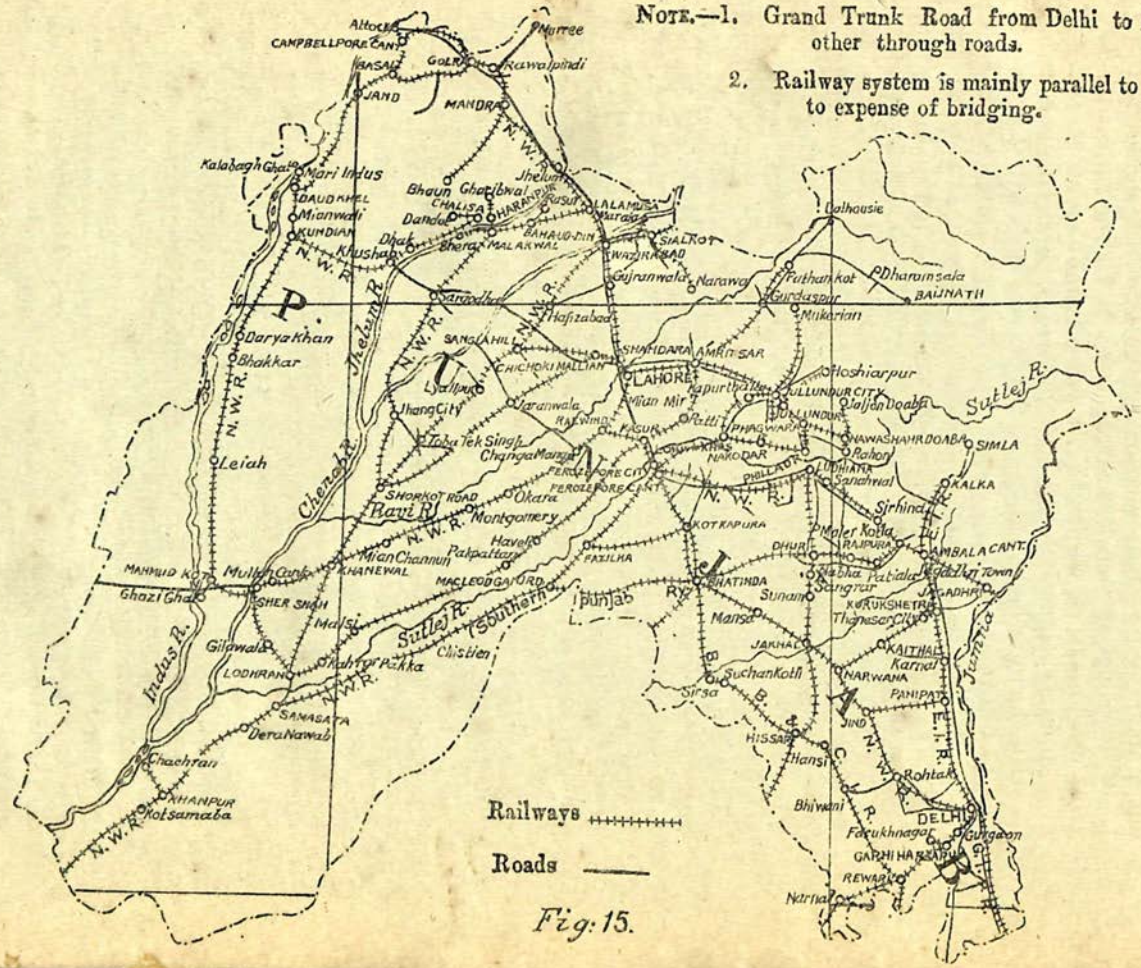


Fig. 15.

from Delhi to Gurgaon and Rohtak and to smaller places beyond them, from Thanesar to Pehowa and Chachchrauli; from Ambala to Kalka and Simla; from Rajpura, near Ambala, to Patiala and Sangrur; from Ludhiana to Malerkotla and Sangrur; from Ludhiana to Ferozepore; from Jullundur to Hoshiarpur; from Lahore to Ferozepore and to Sheikhupura; from Gujranwala to Hafizabad and to Sialkot; from Wazirabad to Sialkot and thence to Jammu; and from Rawalpindi into Kashmir *viâ* Murree. Other isolated systems of metalled roads are in existence round about Lyallpur ; from Multan to Muzaffargarh and thence to Dera Ghazi Khan, in which the presence of a boat-bridge over the Indus affords through communication only in the cold weather ; and from Pathankot to Dalhousie and through the Kangra Valley to Kangra, Dharmsala and Baijnath.

Unmetalled roads.

288. Numerous unmetalled roads traverse the country in all directions, except in the west which is badly provided with road communication; these roads are often metalled for a few miles where they approach a town or a line of railway. Unmetalled roads provide all that is needed for the indigenous system of transport of agricultural produce by bullock cart, but are of little use for lighter vehicular traffic or for motor transport.

Subsidiary lines of Communications.

289. The Communications Board is devoting serious attention to the improvement of unmetalled roads. If it should prove practicable to adjust the proportions of sand and clay so as to obtain a durable surface there may be a great future before this kind of road making. It is estimated that roads on this system may cost no more than Rs. 400 a mile; and their cheapness is an important consideration in these days of financial stringency. The extensive canal system of the province supplements the road communications to a very large extent. The main lines of the canals run between broad banks and usually one of these is kept open to bullock carts and other heavy traffic whilst the other, though unmetalled, is kept in excellent repair and, except in the rains, provides a first-class motor road which, though not open to the general public, can be used by permission when occasion requires. The rivers and a few of the canals provide faci-

lities for water-borne transport but the strength of the current prevents any regular up-stream traffic and they are mainly used for floating timber from the forests of the Northern hills to the railway system of the plains. Except in the west the combined systems of communication are excellent; but in the west the scarcity of metalled and even of unmetalled roads allied with a railway system which has few lines running from west to east leaves much to be desired and the communications are sadly behind the requirements of the rapidly increasing population of the canal colonies.

History of the Public Works Department.

290. The formation of the Public Works Department under Colonel Napier has already been described (*para.* 282). In 1886 in order to meet the increasing demand for public works, three separate branches were formed, the Military Works Branch, the Civil Works Branch including Irrigation, and the Railway Branch, and to these was added, in 1870, the Public Works Accounts Branch. The policy of transferring provincial properties to local bodies for maintenance on fixed grants was inaugurated and has since been acted upon where the capacity of the local bodies permits it. In the new form of government introduced by the Reforms Scheme (1921) the Buildings and Roads Branch of the Public Works Department was transferred to the Ministry of Agriculture.

Public Works Department (Buildings and Roard Branch); Present constitution.

291. This Branch of the Public Works Department is now administered by a Chief Engineer who is also Secretary to the Local Government. For administrative purposes the Province is divided into three Circles of Superintendence, *viz.*, first Circle with headquarters at Rawalpindi ; Second Circle with headquarters at Ambala Cantonment ; third Circle with headquarters at Lahore with 12 Divisions and 33 Sub-Divisions. In addition to the above there are two other administrative units of the Department—the Sanitary Circle with headquarters at Lahore with three Divisions and three Sub-Divisions ; the Hydro-Electric Circle with temporary headquarters at Simla. The offices of the Consulting Architect to Government, Punjab, the Government School of Engineering, Rasul, the Electrical Engineer to Government, Punjab, and the office of the Road Engineer are also controlled by the

Chief Engineer. Changes in the number of Divisions and Sub-Divisions are made from time to time as may be necessary. This Branch of the Public Works Department was formerly known as the Provincial Branch. It is financed from Provincial funds, its primary object being the construction and maintenance of Central and Provincial Works. It assists the Military, Posts and Telegraphs, and Archæological Department, in addition to Municipalities and District Boards. Important works are carried out for such Departments by Government Engineers, a percentage being charged for establishment and tools and plant for works other than Provincial.

CHAPTER XII.

IRRIGATION.

Causes of famine.

292. Famine in the Punjab was the inevitable accompaniment of economic conditions which left the bulk of the people dependent on the soil for their means of livelihood. The produce of the soil was formerly dependent on a short rainy season; and the rains are erratic and subject to violent fluctuations. Famine falls with exceptional severity on a country of small peasant proprietors without any capital, living for the most part from hand to mouth, amongst whom credit ceases to exist as soon as the rains fail. But with the spread of railways, and the improvement of rural credit by means of Co-operation (*para.* 527) the Punjab has been freed from the terrors of famine. Bad harvests bring scarcity and financial embarrassment, but famines in the old sense of the word may be said to have disappeared.

Famine before annexation.

293. Happily there has been no parallel in recent years to the ravages caused by famine in the eighteenth and nineteenth centuries. The great famine of 1783 has already been described (*para.* 11). During the first forty years of the nineteenth century six famines of greater or less severity occurred in 1802, 1812, 1817, 1824, 1833 and 1837. Those of 1802, 1817, 1824 and 1837 were less general than those of 1812 and 1833, and were apparently confined to the east of the Province, where in 1841 an epidemic of fever reached such a height that the crops died standing for lack of harvesters. It was succeeded in the following year by a drought of considerable severity. The famine of 1833 was almost as disastrous as that of 1783. In many villages no land was ploughed up, in but few was any seed sown, in none was a crop raised. What little grass sprang up was eaten by locusts. Cattle and people died, while crowds of emigrants from the highlands to the west poured into the district to help the inhabitants to starve. Famine raged in Kashmir and the starving inhabitants inundated the Punjab, mostly to die. Many sold their children, who were to be found in the houses of prostitutes thirty or forty years later.

The British annexation: Diminished severity of Famine.

294. In the period of prosperity subsequent to annexation, the Punjab was not immune from drought and famine, but the terrors of these visitations diminished at each return as the spread of knowledge among the people and the development of resources enabled Government to cope with them more and more effectively. In 1851-52 there was a drought amounting almost to famine. In 1860 famines raged to the east of the Sutlej, and wheat rose at Delhi from 24 to 8 seers the rupee. Relief was then organised by Government for the first time. In Rohtak 900,000 people were relieved, in Karnal 22,000 were fed in a single month. In 1868-69 a famine of even greater severity devastated the same tract, nearly ten million persons received a day's rations, and half as many more were employed on relief works. In Karnal alone, two million souls were fed, and the daily average for 1869 reached 14,000. Notwithstanding this the loss of life was considerable. Again in 1877-78 drought prevailed east of the Sutlej, and the country narrowly escaped a famine. Relief was given promptly and effectively, and the period of danger and anxiety passed.

Condition of the people before and after the annexation.

295. A study of the gradual development of the resources of Government will show how inverted is the popular perspective of the Golden Age. In the early days after annexation there were no communications worthy of the name (*para.* 280). The bad condition and insecurity of the roads and the levy of vexatious transit and customs dues prevented exportation of grain to any distance, and the people of one tract starved for food while plenty reigned in neighbouring districts. Supplies could only be sent up to the affected area by country carts at the rate of ten miles a day. Even in the early sixties the difficulties of transit were so considerable as to give cause for anxiety as to the dispatch of relief. The contrast between the resources then at the disposal of Government and those now available is remarkable. To-day when one part of India is visited with protracted drought the high prices automatically attract foodstuffs from quarters where rates are cheaper, and railroads diffuse the means of subsistence until prices become equalised.

The Famine Code.

296. In 1888 the Famine Code of the Punjab was issued to give practical effect to the recommendations of the Famine Commission.

The code deals with the three questions of famine relief, famine prevention, and famine organisation, with the result that a detailed plan of action has been prepared in every district likely to be visited by famine. Thus statistics are available showing the numbers of persons for whom Government may have to provide work in the event of serious distress and statements specifying works on which they may be employed. It has also been ascertained whether the works entered in the lists are useful in themselves and sufficient for the purpose, and whether they could be started at once in case of need.

Types of Irrigation.

297. From time immemorial it had been realized that insurance against years of scarcity could be found in irrigation. At the present time the total cropped area of the Province (27 million acres) is composed of—

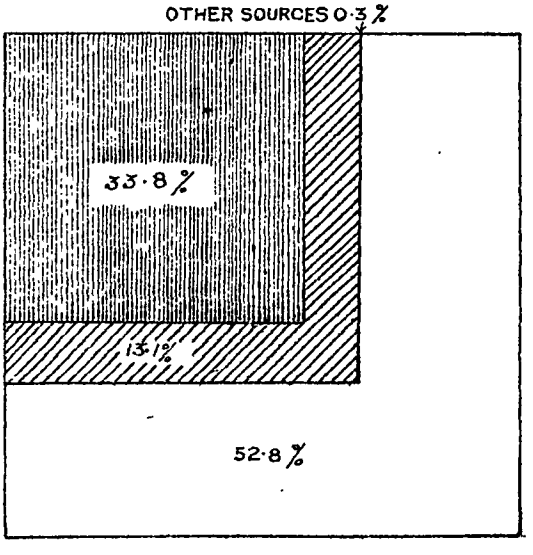
	Million acres.
Unirrigated	14·8
Irrigated by Government canals ...	8·0
Irrigated by private canals	·5
Irrigated by wells	3·5
Irrigated by tanks and other sources ...	·2
Total cropped area ...	27·0

Well-irrigation.

298. The great irrigation schemes are essentially exotic, the products of British rule; the real eastern instrument is the well. Even now one-third of the irrigation in the Punjab is from wells. Moreover the well is an extremely efficient instrument of irrigation. When the cultivator has to raise every drop of water which he uses from a varying depth, he is more careful in the use of it; well water exacts at least three times as much duty as canal water. Again, owing to the cost of lifting, it is generally used for high grade crops. It is estimated that well-irrigated lands produce at least one-third more than canal-watered lands. Although the huge areas brought under cultivation by a single canal scheme tend to reduce the disproportion between the two systems, it must be remembered that the spread of canals increases the possibilities of well irrigation by adding,

PUNJAB IRRIGATION.

Area irrigated by wells.....
" " " canals.....
" " " other sources.....



PUNJAB.

Fig. 16.

through seepage, to the store of subsoil water and raising the level.

Necessary conditions for well-irrigation.

299. The number of wells in the Punjab rose from 245,000 in 1911 to 267,000 in 1920. These are mostly found in the sub-montane tracts where canal irrigation is not available. A well with water level at 35 feet from the surface costs nowadays about Rs. 1,000. The capital represented by wells, assuming this average cost, is therefore 29 crores. As a rule well-irrigation is not practised where the depth of water is much over 35 feet, as the cost of lifting beyond that becomes excessive in comparison with the value of the crops In tracts like Gurgaon, however, the wells are generally 50 to 60 feet deep, and are extensively used for *rabi* waterings for barley. That tract, however, has a fairly secure rainfall, and wells merely supplement the rain, and crops generally get two well-irrigations as compared to four or five in districts like Jullundur and Sialkot. Under such circumstances it pays to lift the water from a much greater depth than is usually considered profitable. Well-irrigation demands a fairly high level of the sub-soil water. The districts, therefore, which employ wells most largely are Jullundur, Sialkot, Amritsar, Ludhiana, Jhang, Muzaffargarh, Montgomery, Lahore and Gujranwala. Except for Jhang, Muzaffargarh and Montgomery, these are all grouped together on the southern side of the Sub-Himalayan tract. To the north lie districts where there is sufficient moisture for unirrigated cultivation, whilst to the south the water level sinks and renders well-irrigation more difficult. In the former districts the lift is so small that the wells can be worked by Persian Wheels which carry a continuous band of earthenware pots; further south though wells are in use they are scarcer and their depth is so great that the Persian Wheel has to be replaced by the less efficient rope and leather bucket.

Other forms of irrigation.

300. As mentioned above about 200,000 acres are irrigated from miscellaneous sources. In the Salt Range and the hilly tracts of Gurgaon and Dera Ghazi Khan, torrents are embanked by means of '*bands*' and the water spread over the fields as required. In the hills and submontane tracts a considerable area, chiefly under rice, is irrigated by small

channels (*kuhls*) taken out of a river or stream and often carried along the hill-sides.

No great irrigation system before annexation.

301. Such were the indigenous systems of irrigation which met the British on their arrival in the Punjab. Economically the country had advanced little on the state in which Alexander found it some two thousand years earlier. He found there no great irrigation system such as impressed his imagination by the waters of Babylon. No sacred bull, as in Egypt, "trampled the *unshowered* grass with lowings loud." The Moghuls did indeed start the Western Jumna Canal, but it was for their own enjoyment rather than the public benefit. Moreover, even if the early rulers could have designed such great works as we are now familiar with, there would have remained the difficulties due to lack of capital and labour, and in the absence of railways and roads, the surplus produce could not have been transported to market. It was not until the early nineteenth century that railways and metalled (macadamised) roads made their appearance in Great Britain and there was no time for the new idea to reach India before the death of Ranjit Singh.

The Western Jumna Canal: First construction by Feroz Shah.

302. The first efforts of the British engineers were directed to the improvement of existing indigenous works rather than the construction of new irrigation projects. Of these in the Punjab the most important was the Western Jumna Canal. Its origin is shrouded in antiquity. The first record of an irrigation project in the Jumna Valley is that of a canal, built by Feroz Shah about the middle of the fourteenth century, with its terminus at Hissar, but whether it derived its supply from the Jumna or from the Chautung Nala, a stream further to the west and now merely a dry depression, is uncertain. As the main object of the work was to convey water to the Emperor's hunting lodge at Hissar rather than to irrigate the intermediate country, advantage was taken, in fixing the alignment, of any natural hollow or channel whose slope and direction were found suitable. Consequently the resulting work took the form of a linked series of drainages rather than of a canal, as the word is understood to-day.

Renovation by Akbar.

303. About 1568, the channel, which had fallen into disuse, was renovated by Akbar, the object being, in this case, the irrigation of the

Hissar district, which the Emperor was bestowing upon his son, Muhammad Salim. "God has said, from water all things are made. I consequently ordain that this jungle, in which subsistence is obtained with thirst be converted into a place of comfort." Thus ran the *Sanad* in which the renovation was ordered, and once again, after an interval of a century, water was conveyed by the canal to Hissar. Sixty years later further remodelling became necessary, and in 1626 this was carried out under the direction of Ali Mardan Khan, Shah Jehan's great engineer. In connection with it a new branch was constructed to convey water to supply the fountains of the Imperial palace and to adorn the streets of the rising city which the Emperor was erecting at Delhi. The maintenance of the supply, however, required constant labour and a greater degree of attention than was likely to be accorded to it amongst the pressing cares of a falling empire. The canal ceased to flow about the middle of the eighteenth century and remained in disuse until reopened by the British.

Water-logging in area commanded by Western Jumna Canal.

304. In 1821 a small instalment of the waters of the Jumna was again diverted into the Delhi canal by Lieutenant Blane of the Engineers, but the experiment was mistrusted both by Government and by the population of the tract affected, funds were severely restricted and the original alignment was consequently adhered to for reasons of economy, natural channels continuing to be utilized as far as possible and depressions being crossed on earthen banks with no adequate provision for the intercepted drainage. Swamps, as was to be expected, formed upstream of the canal, while the occasional collapse of the banks resulted in widespread injury to the villages and crops in the vicinity. The famine of 1832-33 led to the enlargement and multiplication of the irrigating channels, but these were executed in haste upon imperfect information and on bad alignments. Altogether the early history of the Western Jumna Canal is one of dearly bought lessons in hydraulic engineering. No check was put on over-irrigation and between this fact and the faulty design of the canal itself large portions of the commanded tract became water-logged. Saline efflorescence made its appearance and there were yearly epidemics of malaria.

Remodelling of the Western Jumna Canal.

305. In 1873 the remodelling of the canal as a whole was taken in hand; the old alignment was improved and, in its lower reaches at least, the Western Jumna Canal is now entitled to be ranked as a modern irrigation work. A permanent weir across the Jumna was constructed at Tajewala, by means of which the water is diverted, through a regulator, into the western branch of the river, which itself serves the purpose of a canal for the first thirteen miles. At this point it is joined by the Somb and Pathrala torrents and a dam at Dadupur across the combined stream directs it into the excavated channel. The main canal and the Delhi Branch have been realigned for a great part of their course, and drainage works have been freely introduced. The Sirsa Branch, the largest branch of the canal, was added in 1889—95, and the whole system, from being a standing reproach, is now an unmixed blessing to the countryside. Over 2,000 miles of main canals and distributaries are in operation and, in 1919-20, 855,000 acres were irrigated, returning 11¼ per cent. on the capital outlay of Rs. 178 lakhs.

The Upper Bari Doab Canal.

306. One of the great classic works in Northern India is the Upper Bari Doab Canal from the Ravi in the Punjab. The former rulers of the country had already constructed a small canal from that river to bring water to Lahore, from which a branch was led to Amritsar to supply the sacred Sikh tanks there, and, although it proved impossible to follow or utilize this older work as the main line of a canal of more extended scope, many portions of it have been subsequently incorporated in the distributary system of the more modern undertaking.

Political motive for its construction.

307. The Upper Bari Doab Canal project was one of the first measures which engaged the attention of the British Government after the annexation of the Punjab in 1849, its construction being regarded almost as a matter of political necessity. It was important to provide employment and an early supply of water for irrigation for the large bodies of disbanded Sikh soldiery whose homes were in the watershed between the Ravi and the Beas. Thrown out of their accustomed means of livelihood, they would otherwise have had little encouragement to turn to agriculture in a

country in which water for irrigation was at the same time so scarce and so indispensible. Consequently, in 1850, Lieutenant Dyas of the Bengal Engineers was instructed to frame plans, in general accordance with those of the Ganges Canal which was at that time also under construction, so as to provide for the irrigation of the tract to the utmost extent of the cold weather supply of the Ravi. The scheme was completed by the end of the year and work upon it was commenced in 1851.

Reasons for limitation of length.

308. The length of the main line, as originally proposed, was considerably greater than as actually constructed. While the work was in progress it was found that the minimum discharge of the Ravi at the canal head at Madhopur was very much less than had formerly been believed, and the grants available for the work being also limited, it was decided in 1856 to curtail the main line to a length of 140 miles and to confine operations to this and to the Lahore Branch, leaving for future consideration the Kasur and Sobraon Branches, which had formed part of the original scheme. The project thus modified was opened in 1850.

Improvement of the indigenous inundation canals.

309. Another irrigation problem requiring immediate attention on annexation was the improvement of the indigenous inundation canals. There are a large number of such canals on the Sutlej, the Indus, the Chenab and the Jhelum, the majority of which were already in existence at the time of annexation. In some parts of the Province they were in serviceable condition, in others they had been allowed to become choked and useless. Strenuous efforts were immediately made to restore them and to extend their scope. Old channels were cleared, remodelled and extended, new canals were constructed and several which had been built by private agency were taken over by Government at their owners' request. There are now 40 such inundation canals administered by the State, of which 18 draw their supplies from the Indus, 9 from the Chenab, 8 from the Sutlej and 5 from the Jhelum. They have, with their branches, an aggregate length of 3,900 miles and are capable of irrigating nearly a million and a half acres. They form, therefore, an important factor in the agricultural prosperity of the Punjab.

The first loan irrigation works.

310. The acceptance by the Secretary of State of the principle of financing productive works by loans raised in the open market naturally gave a great stimulus to the development of irrigation in India. The works already constructed had furnished a series of valuable lessons. It had been clearly demonstrated that irrigation canals, if properly designed and situated, were extremely lucrative investments. Moreover, for the first time, money was available in reasonable and regular amounts. The direct result of the new policy was the inauguration of five works of great magnitude of which the Sirhind Canal was one.

The Sirhind Canal.

311. The Sirhind Canal in the Punjab draws its water from the Sutlej above the junction of that river with the Beas and irrigates a wide stretch of land lying to the south of the river, part of which is British and part Indian State territory. The area commanded by the canal is 8,500 square miles, of which 47 per cent. is British, 35 per cent. is in the Patiala State and 18 per cent. in the States of Nabha, Jind, Faridkot, Malerkotla and Kalsia.

Sirhind Canal originally designed for Patiala State; but area afterwards extended.

312. The first proposal for a canal from the Sutlej contemplated the irrigation of the Patiala State lands only and a project of this limited scope was actually prepared, but further consideration showed that a scheme for the service of so limited an area was unlikely to prove remunerative, and in 1867 orders were issued by the Government of India for the preparation of a revised and extended project, the basic principle to be observed being that the waters of the Sutlej should be utilized to the best possible advantage in the tracts commanded, irrespective of territorial boundaries.

Method of distribution between British and State territory.

313. The work was constructed in strict accordance with this principle. Under an agreement drawn up in 1873 between the British Government and the three States mainly concerned, namely Patiala, Jind and Nabha, the project is divided into three sections. The headworks and the main line of the canal, which terminates at mile 39 and on which there is no irrigation, form the first section ; the two British branches, the Abohar and Bhatinda

branches, form the second section ; and the Patiala branches (so-called because most of the land commanded by them is in that State) consisting of the Feeder Line, its extension, the Patiala Navigation Channel, and the three branches, the Kotla, Ghaggar and Choa branches, which draw their supplies from the Feeder Line, form the third. Of these sections the second is intended mainly for the irrigation of British territory and that of the non-Signatory States of Faridkot and Kalsia, the third mainly for the irrigation of land belonging to the three Signatory States. There are, however, considerable areas belonging to the Signatory States commanded by the second section, while on the other hand detached portions of British territory are commanded by the third. The agreement provides for the payment by the British Government of the whole cost of the second section, and by the Signatory States of the whole cost of the third, the cost of the first section being divided between the parties in proportion to the areas commanded by the second and third sections respectively. In accordance with this arrangement the British Government bore 64 per cent. of the cost of the first section and the Signatory States 36 per cent. In consideration of their contribution towards the initial cost of the project, the Signatory States are entitled to 36 per cent. of the supply of water available at the bifurcation of the British and Patiala branches.

Management of Patiala Branches serving State territory.

314. The management of the Patiala branches is vested in a British Canal Officer, who is responsible for their maintenance and for the distribution of the supply between the three States. With one or two exceptions, which have been made by mutual agreement, the distributaries from these branches have been constructed on the territorial principle, each having been made for the exclusive irrigation of an individual State, or of such detached portion of British territory as may be commanded by it, not being used for the irrigation of any other State. Each State undertakes the maintenance and management of its own distributaries, exercises complete control over the irrigation effected from them, and assesses and collects its own revenue. On the British branches this system does not obtain, and irrigation is carried on and rates are collected without reference to territorial considerations.

315. The headworks of the canal are situated where the Sutlej debouches from the Siwalik Hills. The river has been harnessed by means of a weir 2,370 feet long, with its crest 7½ feet above the floor of the canal head regulator, and upon this crest hinged shutters, 6 feet high, have been installed, thus enabling water to be impounded to a height of 13 feet above the regulator floor. The bottom portions of the regulator vents, of which there are 13, each of 21 feet span, are closed by means of gates, over the top of which the supply is admitted into the canal. In this way top water only is taken, and the heavier grades of silt, which roll along the river bed, are excluded and carried away through the undersluices, which consist of 12 bays each of 20 feet span placed on the left flank of the weir at right angles to the regulator.

Headworks of the Sirhind Canal.

316. For the first three miles of its course the canal, which is 200 feet wide, is in a heavy cutting, but thereafter it enters the trough of the Sutlej, a level, marshy, alluvial valley, through the soft material forming which the river has been accustomed, from time immemorial, to cut its channel at pleasure, wandering freely from one side to the other. For nine miles the channel had to be excavated through this spongy and saturated soil, where the sub-soil water level was at times 20 feet above the bed of the canal. Work of this nature is of the utmost difficulty. Expensive cuttings were necessary to drain the springs exposed by the excavation, powerful pumps had to be employed to cope with the continuous influx of water and, even when the digging was complete, the task of keeping the channel open was by no means light. To add to the trouble, the greatest masonry works on the line occur in this reach of the canal.

Difficulties in construction.

317. The first of these is the Budki superpassage, the largest work of its kind in India. It carries across the canal two great torrents, the Sugh and Budki, with a combined discharge of 60,000 cubic feet a second. The superpassage is 450 feet wide with parapets 14 feet high and is carried over the canal on seven arches, each 31¾ feet span, which are supported by piers eight feet thick. A little further down is the Siswan superpassage which, although not so large as the Budki, proved the most difficult work on the

Budki and Siswan superpassages.

line to construct, the foundations being 20 feet below the sub-soil water level. The earth was so saturated that it repeatedly fell in at the sides as the digging proceeded, thus necessitating a very much larger excavation pit than had been planned, nor did the seasons make any appreciable difference to the springs. There are seven spans of 37½ feet for the canal waterway ; the superpassage is 250 feet wide between parapets, supplying a crossing place for 24,000 cubic feet of water a second. Owing to the fact that cracks, due to the settlement of the foundations in the oozy mud in which they rest, evinced themselves in the masonry subsequent to the completion of construction, the Siswan superpassage was at one time the cause of much anxiety, but the work remains intact and, although careful annual observations are still made, there appears to be little fear of further deterioration. Both these superpassages have actually passed floods about twice as great as those for which they were designed. Other important works in this reach are the Daher and Haron syphons, which carry large drainages under the canal, and the Chamkaur regulator and escape.

Construction of the main line and branches of the Sirhind Canal.

318. Neither the remaining portion of the main line nor the branches presented any special difficulties other than those inseparable from the execution of a great irrigation work in a tract in which both the local labour and the local resources of all kinds were entirely inadequate. To ease the labour situation three jails were established near the headworks, from which about 1,600 convicts were on the average always available. This contingent proved of great value and materially assisted in the completion of the canal. A famine in the vicinity also expedited construction, as for about three years famine labour poured on to the work. Practically the whole of the 900 million cubic feet of excavation in the main line were removed in baskets on the heads of men and women, without the use of mechanical appliances of any sort. The canal was opened for irrigation in 1882, although several of the branches were then unfinished and the construction of the distributary system had hardly been begun.

Statistics of the Sirhind Canal.

319. The Sirhind Canal has a mileage of nearly 4,000 miles. It irrigates 1,600,000 acres, of which 1,050,000 acres are on the British and 550,000 acres on the Indian States branches. Its

total capital cost up to date is Rs. 392 lakhs; the British share is Rs. 258 lakhs, on which a return of 11½ per cent. is realized.

The Punjab Colony Canals: The watersheds of the Punjab.

320. In its strict etymological sense the Punjab, or land of the five rivers, is the country enclosed and watered by the Jhelum, Chenab, Ravi, Beas and Sutlej, though the Province, as at present constituted, includes also the tableland of Sirhind, south of the Sutlej, and the so-called Sind-Sagar watershed, the wedge of country lying between the Jhelum and the Indus.

The Punjab proper: Rainfall poor; but rivers suitable for irrigation.

321. There is, with the single exception of Sind, no portion of India which is so favourably situated as regards its rivers or so unfavourably as regards its rainfall as the Punjab proper, that is to say the tract between the Jhelum and the Sutlej. The accompanying sketch map (*fig.* 17) makes this clear. It shows the relative position of the rivers and also the annual average rainfall in the various sections of the tract. By far the greater portion of it had less than fifteen inches a year and much of it less than ten. When it is remembered that even these small amounts are liable to serious deficiency in a year of drought, it will be readily comprehended that, until the introduction of irrigation, practically the whole vast stretch of country was desert waste. The only exceptions were the fringes of the rivers where cultivation, though never very prosperous, was rendered possible to some extent at least by means of inundation canals and wells.

Colonisation necessary as well as irrigation.

322. The problem which confronted the Punjab Government in this case was quite different to any which had previously had to be faced. In all other irrigation schemes, with the single exception of the Lower Swat Canal, the main object had been the improvement of existing cultivation. The cultivator had been in occupation long before the canals were even projected. But in the Punjab desert, or Crown Waste tracts as they are called, there was no resident population, beyond a few nomads who eked out a precarious existence as graziers, and consequently it was necessary, simultaneously with the introduction of irrigation, to transport bodily whole communities into the new areas thus opened up.

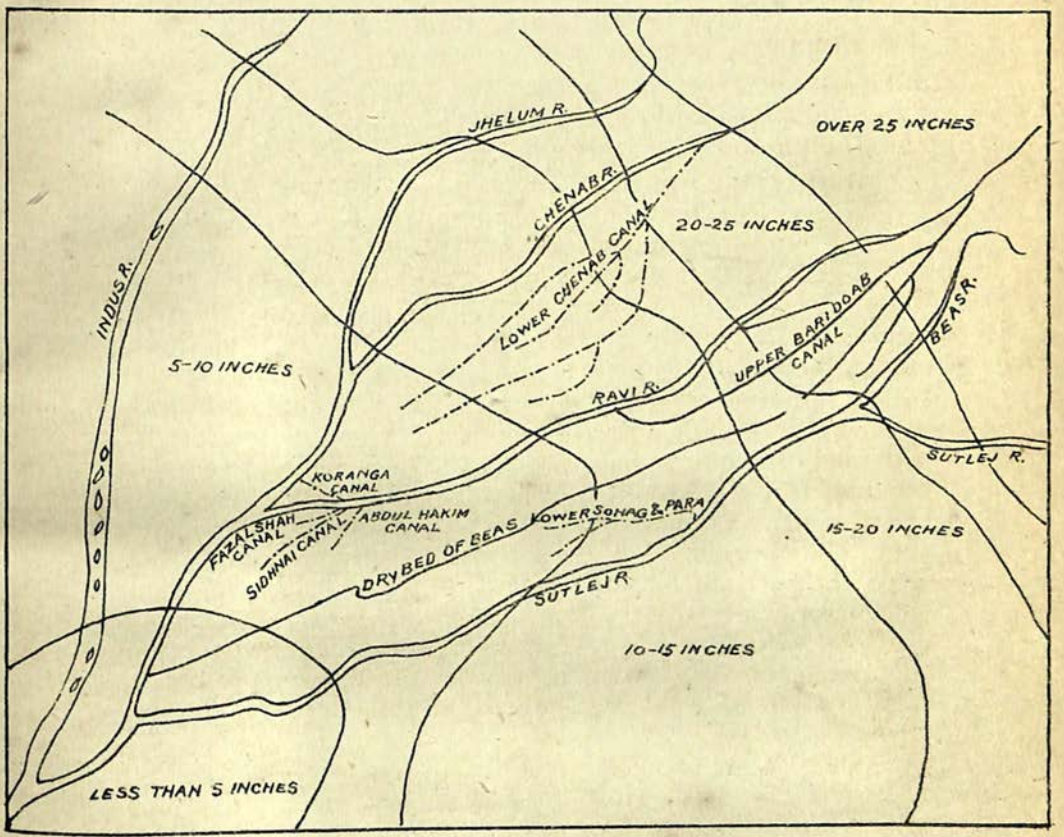


Fig. 17 Sketch map of Punjab watersheds, showing rainfall contours.

PLAN OF A SQUARE IN THE CANAL COLONIES

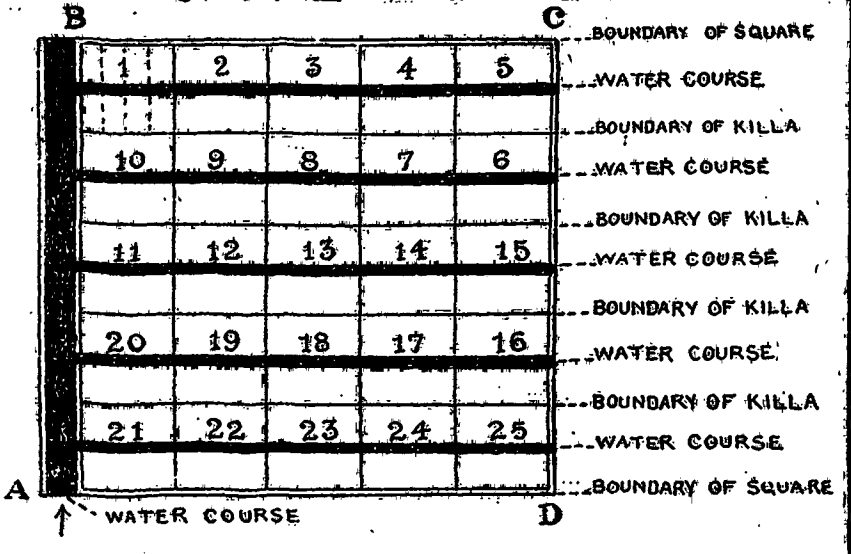


Fig: 18.

323. Prior to the construction of the canal, and with a view to determining the approximate position of the main line and branches, the tract to be colonized is divided up into large squares or rectangles, each of which is a multiple of the smaller square or rectangle into which the land will subsequently be sub-divided for the purpose of allotment. These large squares or rectangles form the basis of the original level survey of the canal. The sub-division into smaller squares or rectangles is then made, and the level survey executed on the basis of these smaller divisions serves to determine the lay out of the distributaries and watercourses. The whole tract is, in this way, demarcated into equal and regular areas, the shape and size of which have varied in the several schemes, being 22½ acre squares in the Sidhnai Colony, 27·8 acre squares in the Lower Sohag, Lower Chenab and Lower Jhelum Colonies, and 25 acre rectangles in the Triple Canal Colonies. A square or rectangle is the usual unit of allotment, and each such unit is, for the purpose of the revenue assessments, again sub-divided into smaller squares or rectangles each of about one acre in extent. In the Triple Canal Colonies nearly four million such small rectangles have been demarcated (*fig.* 18).

Process of colonisation.

324. In a colony tract the alignment of the watercourse precedes the creation of holdings and consequently it is possible to make the boundaries of each group of allotments coincide with the boundaries of the area commanded by the watercourse which irrigates it. For this purpose, a contoured map of the tract is prepared showing the natural drainages, and the area commanded by one or more such watercourses is constituted into a village. Thus no two villages are ordinarily called upon to share a watercourse, to the risk of peace and order. The village boundaries having been settled, the general lay out of the settlement is determined, the main streets are demarcated and land is set aside in the vicinity of grazing grounds for the accommodation of village servants and for communal purposes such as tanks, tan-pits or manure heaps. All this is done before the colonists arrive. They find the village sites ready for them, and have only to build their houses and commence breaking up their land. The colony villages, thus methodically planned, possess marked sanitary advantages over the ordinary Indian homesteads.

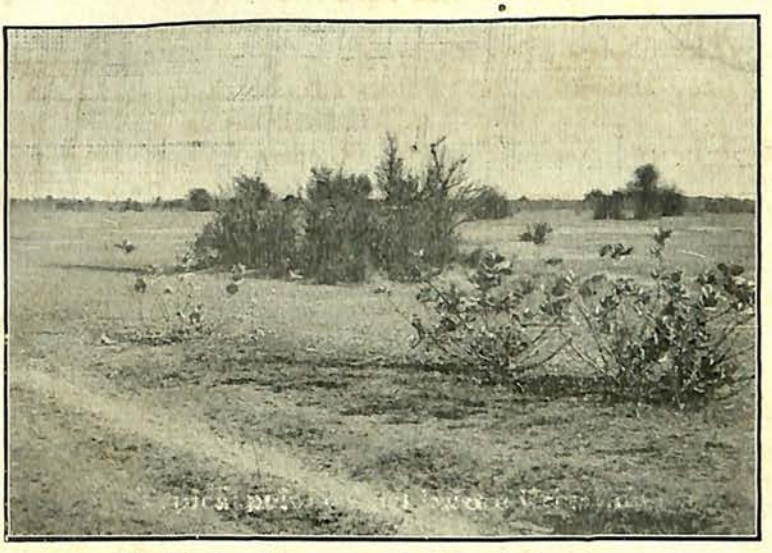
Village areas normally coincide with areas commanded by a watercourse.

Selection of colonists.

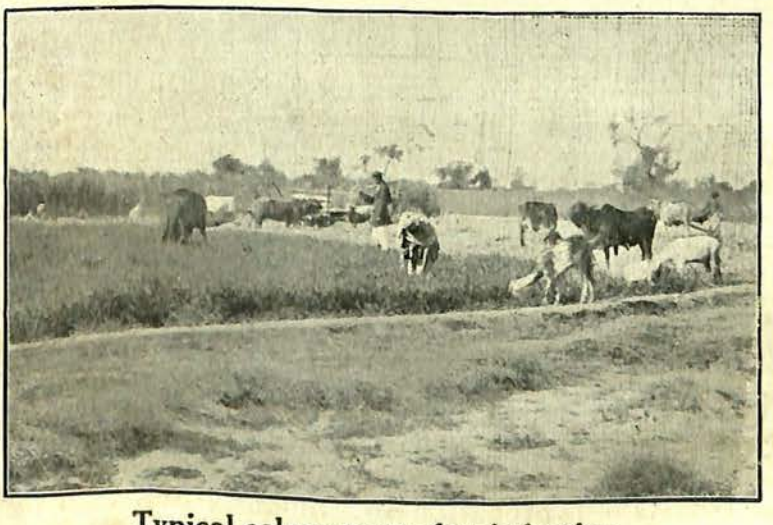
325. The choice of colonists is left, in the main, to the revenue officers of the districts from which they are drawn. The object of colonization is two-fold, to open up new areas, and to relieve pressure upon the land in those parts of the Province where the agricultural population had reached or is approaching the limit which the land available can support. It is from these congested districts that the colonists are chosen, only members of agricultural tribes who are either hereditary land-owners or occupancy tenants being ordinarily eligible for the so-called peasant grants under which the bulk of the land is allotted. Selection is usually made personally from each village by the district officer concerned, and is by no means an easy matter. From the mass of applicants the ineligible must be weeded out, dotards and mere boys put forward in the hope of securing an extra square for the family, those who have already sufficient holdings, those who have mortgaged a considerable share of their land, the physically and mentally unfit, the village loafers and the like. When this has been done there remains a band of men, all connected by common ties and, to a large extent, by common descent, all physically fit to take up life in a new country under considerable initial difficulties, all short of land, but solvent and with sufficient resources to start them. Groups of this nature are despatched to the colonies as a unit, each group being of about the size required to form the nucleus of a new village, and in this way they all start at the same time and bring with them, ready made, the elements which go to form a separate village community. The weaker ones can get help in the shape of loans, cattle and seed from those better off, and the village is therefore far more suited to face the hardships inevitable in the first months of immigration than it would be were it built up from isolated individuals, none of whom knew or trusted his neighbour, and between whom there was no cohesion of any kind.

Conditions under which colony grants are made: (a) Peasant grants.

326. The terms upon which peasant grants are made vary somewhat in the different colonies. The average area allotted to each individual is generally from 1½ to 2 squares or about 40 to 50 acres, the land being held by the colonists on probation as a tenant-at-will for a certain number of years. In most of the earlier colonies



Typical colony tract before irrigation.



Typical colony tract after irrigation.

inalienable occupancy rights in the holding were granted at the end of this period, either free of charge or on payment of a nominal sum, but a revised procedure has since been introduced under which occupancy rights are granted after a first term of years and, after a further term, tenants are given the option of purchasing alienable proprietary rights at a privileged price, payable in easy instalments. Sometimes, as a condition of the grant, the settler is required to render a specific service to Government such as by undertaking to maintain a suitable mare for the breeding of Army remounts or to supply labour for the repair and maintenance of the canals, when necessary.

(*b*) Landed gentry and reward grants.

327. There are many other forms of grant, designed to suit the special circumstances of the grantee or of the tract to be colonized. For example, grants larger than the ordinary peasant grant are made to hereditary landholders of more substance and of better social status than the ordinary cultivator; while still larger allotments are sometimes conferred on men of means willing to experiment in improved methods of cultivation and irrigation. Grants are also often made to those whose services to Government, civil or military, paid or honorary, have been especially deserving of reward. Small areas are moreover sold by auction from time to time to test the value of the land in the open market.

Development of the colonies.

328. Once the grantees are established in their new villages, development proceeds apace. The alignments of the necessary communications between village and village and between the villages and the boundary roads which run parallel to the canals have already been demarcated, and on these alignments village roads come into being. The increasing harvests demand increasing facilities for transport. Metalled roads and railways make their appearance, and upon them towns and markets spring up. Viewing a typical colony tract, flourishing as but few parts of India flourish, it is almost impossible to believe that only a few years previously it may have been a barren, waterless, uninhabited desert.

The Lower Sohag and Para Canal.

329. The history of colonization may be said to have commenced in 1882 with the formulation of the Lower Sohag and Para Canal project from the Sutlej. The canal derives

its name from the great Sohag nullah, and its offshoot the Para, the course of which it approximately follows. The head of the nullah is on the right bank of the river, some 45 miles below Ferozepore, and for many years prior to the construction of the canal a small cut, some twenty feet in width, was made from the Sutlej down the bed of the nullah, forming as it were a central gullet, through which water was carried to a point about twenty miles from the head, where it was impounded and used for the irrigation of the surrounding lands. The Lower Sohag Canal was constructed on somewhat similar lines, the channel being excavated in the nullah bed for the first nineteen miles of its course, except where, in order to avoid excessive length, cuttings had to be made through the necks of the large bends and loops, which were a peculiar feature of the old drainage line. After the nineteenth mile a new artificial channel was dug for the canal, which continues up to the thirty-third mile, where it bifurcates into two branches, one following approximately the alignment of the Sohag nullah, and the other that of its effluent, the Para. Both of these branches repeatedly cross the old nullahs.

A purely inundation canal.

330. The canal has two separate heads on the river, of which the lower is that originally constructed. The upper head, which is situated about one and a half miles above it, was not built till some years later, being necessitated by heavy shoaling in front of the lower one, which threatened to cut off the supply from the Sutlej. The canal is a purely inundation canal, and is consequently dependent for its volume upon the vagaries of the water level in the river. It obtains an average supply of about 700 cubic feet a second during the irrigation months from May to September.

One of the earliest experiments in colonisation.

331. As an engineering work the canal is of no particular interest, but it is important as having afforded one of the two earliest experiments in colonization. Of the 186,000 acres commanded by it, nearly half was Government waste land, which was, on the construction of the canal, divided into 54 villages and allotted to carefully chosen and industrious agriculturists from the adjacent over-populated districts. The work of settlement extended from 1887 to the cold weather of 1888-89 and, in spite of the drawbacks and disappointments caused by the unavoidable fluctuations in the water supply, the experi-

ment was completely successful, the little colony soon waxing prosperous.

Area irrigated.

332. No separate capital account is maintained for the canal, which is now included with others in the so-called Upper Sutlej Series of inundation canals. It irrigates about 80,000 acres in a good year and, aided by the wells which have been dug in almost every holding to enable periods of short supply to be tided over, protects efficiently the area commanded by it.

The Sidhnai Canal.

333. The Sidhnai Canal was constructed at the same time as the Lower Sohag and Para. It was originally projected in 1856, but it was not until 1882 that the proposal was first seriously considered. It has its head on the Ravi in the Multan district and irrigates a considerable area at the western extremity of the Ravi-Sutlej watershed.

The Sidhnai system of canals.

334. The Sidhnai system consists of four canals, the Sidhnai Canal proper and three small independent channels, the Koranga, Fazal Shah and Abdul Hakim Canals. The three smaller channels, which are really only large distributaries, were added to the scope of the project during its construction in order to obviate all possibility of riverain villages below the weir being affected adversely by the diversion of water from the river into the Sidhnai Canal. The Koranga and Fazal Shah Canals take off from the right and left flanks of the weir respectively, while the Abdul Hakim Canal has its head on the left bank of the river, about $3\frac{1}{2}$ miles above the weir.

Head of the Canal.

335. The Sidhnai Canal derives its name from that of the remarkable reach of the Ravi on which its head is situated. For most of its length the river is singularly tortuous and the banks are comparatively low, but in the Sidhnai reach, which terminates where the river debouches into the open a few miles above its junction with the Chenab, the centre line is almost dead straight for over eleven miles and the banks are firm, high and well-defined, the width between them increasing almost uniformly from about 450 feet at the narrowest point, near the upper end, to 1,400 feet at the tail. The weir is situated about half way down this reach. It is 738 feet long

between abutments, and is divided by piers into 32 bays each of 20 feet. The tops of these piers are connected by timber beams and the vents thus formed are closed by means of narrow wooden planks placed vertically, with their upper ends resting against the crest of the weir. When the river is low the vents are kept closed, the planks being gradually removed as the water rises, to allow of the free passage of floods. The Sidhnai Canal proper is 37 miles long, while the three smaller canals have a combined length of 31 miles, the maximum discharge of the whole system being about 1,800 cubic feet a second. From these main lines 384 miles of distributaries are fed.

The Sidhnai Canal partly perennial partly inundation.

336. The system is distinguished by one peculiar feature. Technically, owing to its permanent headworks, it is not an inundation canal; practically, owing to its position on the Ravi, it is not a perennial one. The supply in the river during the cold weather season is insufficient for the needs of the Upper Bari Doab Canal, which draws off every available drop of water at Madhopur, more than 300 miles higher up, and any small volume which percolates through or below the works there is lost again in the river bed long before the Sidhnai headworks are reached. It therefore frequently happens that the Sidhnai reach is dry for several consecutive weeks, or even months, during the winter. The canal thus holds a position midway between that of a perennial and that of an inundation canal. It resembles the former in that, when there is any water in the river, its headworks enable it to utilize the whole volume irrespective of the natural surface level; it resembles the latter in that it has generally, owing to shortage of supply, to remain closed during part of the cold weather season. But the position of headworks enables it to obtain water both earlier and later than would be possible were it merely an inundation canal.

Colonization difficulties.

337. The area commanded by the system is 417,000 acres, of which 232,000 acres were Government waste. Colonization began in 1896, in which year the canal was opened, and for some time success seemed doubtful. A few prospectors came down and returned dissatisfied. The jungle waste looked uninviting and the indigenous inhabitants showed themselves decidedly hostile to the strangers. But with the arrival of a party of

pioneer colonists from Amritsar the tide turned, and once a beginning had been made no further difficulty was encountered. The main work of colonization was completed within 2½ years, and another flourishing colony added to the Punjab.

Success of the undertaking.

338. The success of the scheme can be gauged by the direct financial returns to Government which, of course, represent only a small fraction of the colonists' profits. The capital account of the system stands at Rs. 13½ lakhs and, after paying all its working expenses and interest charges, it has returned six times this amount in the shape of net profits in the 35 years during which it has been in operation. In 1919-20, 284,000 acres were irrigated from it, and it yielded a return of over 40 per cent. on capital. It was largely owing to the success obtained on the Sidhnai Canal that Government were encouraged to proceed with further experiments in colonization and on a far greater scale.

The Lower Chenab Canal.

339. The Lower Chenab Canal can claim, with considerable justification, to be the most extensive and successful irrigation system in India and probably in the world. In view of this fact it is difficult now to realize how inauspicious was its commencement, how at one time it seemed doomed to ignominious failure, and what vicissitudes it passed through before it attained its present status. The watershed between the Chenab and Ravi rivers was an ideal situation for an irrigation canal. The Chenab afforded a splendid and unfailing source of supply and neither deep digging nor any special engineering difficulties had to be faced, so that a system was possible, inexpensive in comparison with its scope. The watershed was large, the soil for the most part very fertile and the bulk of land Government waste. The rainfall, moreover, was extremely deficient, so much so that, in the upper portion of the tract, cultivation of any sort was very precarious without irrigation, while more than half the area was desert. Seldom if ever has a combination of circumstances, so favourable to the introduction of canal irrigation, been met with in any project.

Vast scope of first project.

340. The first proposals for the irrigation of the tract were framed in 1875 and contemplated an enormous canal, with its head above Merala where the headworks of the recent-

ly constructed Upper Chenab Canal are now situated, and a distribution system embracing the whole of the Chenab-Ravi watershed. Though it possessed many defects in detail the project was a remarkably complete one, but it proved to be in advance of its true time. With no experience of colonization the financial prospects of the scheme appeared to Government to be, to say the least of it, uncertain, and under the circumstances they not unnaturally hesitated to embark upon the large expenditure entailed, estimated at Rs. 345 lakhs.

Reaction: failure of small Ramnagar Canal.

" 341. The consequence of this refusal of the original project was a swing of the pendulum in the direction of excessive timidity, and the next proposal, framed in 1882, was for a small inundation canal, the so-called Ramnagar Canal, with its head at Garhi Gola some 40 miles below Merala, to irrigate 144,000 acres at a cost of about Rs. 30 lakhs. This project was sanctioned in 1884, and the canal was opened in 1887. It was a complete failure from the first. The estimate of cost was greatly exceeded and the prospects of its ever proving remunerative were extremely remote. The canal silted heavily in the flood season, and as the river fell there was no means of forcing water into it to mature the crops sown. In view of the uncertainty of the supply, colonization was an obvious impossibility.

New project.

342. In 1889, therefore, a fresh project was prepared, which provided for a weir across the river and a considerable extension of the canal system, the estimate amounting to Rs. 104 lakhs and the anticipated area of irrigation to 400,000 acres. The site chosen for the headworks was some eight miles above the offtake of the Ramnagar Canal, this point being selected so as to enable the latter to be fed without any great modification of levels. The project was sanctioned in 1890 and construction was immediately commenced, a special circle of superintendence being formed for the purpose with Major S. L. Jacob in charge.

Lower Chenab Canal scheme as finally sanctioned.

343. It is to the initiative of this officer that the Lower Chenab Canal, as it exists at present, is mainly due, for no sooner had he assumed charge of the works than he perceived the desirability of a further extension of the scope

of the sanctioned scheme, and commenced to press upon the notice of Government the advisability of the preparation of a complete survey of the watershed with a view to the formulation of yet a third porject, to embrace the whole area which could be commanded. His views were accepted and the necessary surveys were put in hand simultaneously with the construction of the weir. The difficulties attendant on these surveys, carried out as they were in uninhabited desert, were enormous, but eventually the whole watershed was cross-sectioned at 2,000 feet intervals and the maps so prepared have since been proved to be very fairly accurate. On the basis of them a revised project was drawn up in 1891. Major Jacob estimated for a canal with a head capacity of 9,000 cubic feet a second and included in the area to be irrigated all the land in the watershed where the sub-soil water level was more than 40 feet from the surface. The cost of these proposals was estimated at Rs. 284 lakhs and the annual area of irrigation at 1,170,000 acres. This estimate was, however, modified by the higher authorities, the discharge being reduced to 8,000 cubic feet a second, the cost to Rs. 265 lakhs and the annual area to 1,100,000 acres. In this form the scheme was finally sanctioned in 1892. It may be stated at once that not only has the irrigated area been far in excess of this modified estimate but that it has actually reached a figure more than double that adopted in Major Jacob's more sanguine forecast.

Former desolation of the tract.

344. The tract which the canal was designed to serve was one of extreme desolation. Water lay for the most part from eighty to a hundred and twenty feet below the surface of the soil, while the rainfall was scanty and uncertain. With the exception of snakes and lizards the country was extraordinarily devoid of animal life. The vegetation, such as it was, consisted mainly of dusty shrubs, some of a certain value as fuel but others of no use either to man or beast, and grazing was, generally speaking, conspicuous by its absence. The only inhabitants of the country were the indigenous nomads, a spare and hardy race who eked out a precarious existence by means of their camels and goats, being almost independent of any form of diet other than milk. Such was the country in which the engineers were destined to live and labour for many years, and which the Lower Chenab Canal has converted from a wilderness into a garden.

345. The head of the canal is situated at Khanki where the river is spanned by a weir of 4,090 feet long, divided into eight bays each of 500 feet, with a flying bridge, consisting of a cradle running on a wire rope from bay to bay, to permit of men crossing the weir during floods. As constructed, the weir was little more than a bar across the river to prevent retrogression of levels, the raising of the water surface being effected by means of falling shutters, six feet high, erected on its crest. Undersluices, consisting of 12 vents each 20 feet wide, were provided on the left flank of the weir immediately below the head regulator, which was given 12 openings of 24½ feet width, each opening being divided by small piers into three vents 6½ feet wide.

Headworks at Khanki.

346. Considerable modifications have been made in the headworks since their original construction. In 1910, in view of the enormous quantities of silt which were found to enter the canal, a raised cill was added to the head regulator and, in order to obtain the same area of waterway, the small dividing piers were removed and a subsidiary regulator of five spans of 24½ feet width constructed a short distance above it. In 1918-19 the weir crest was raised by 2⅓ feet to enable better control of supplies to be obtained, and the gates and gearing of the undersluices were replaced by modern gates of the Stoney pattern.

Subsequent improvements of headworks.

347. The canal carries the enormous discharge of 10,700 cubic feet a second, six times that of the Thames at Teddington, which it distributes by means of a system comprising 427 miles of main canal and branches and 2,243 miles of distributaries. There are nine branches, ranging from the great Gugera Branch, with a discharge of 4,500 cubic feet a second, itself a large canal, to the little Kot Nikka with a discharge of only 360 cubic feet a second.

Main Canal and branches.

348. The construction of the canal was complicated by the fact that the smaller canal and the new headworks had been opened in 1892, so that the enlargement of the main line from a width of 109 feet to one of 250 feet, including the rebuilding of the bridges and the regrading of the bed, had to be carried out while the canal was in flow and irrigation in course of development. The enlargement was effected by constructing

Difficulties in enlarging main line.

a second channel alongside the first, leaving only an earthen embankment between, and subsequently both were run together. The removal of this embankment presented serious difficulty, as the tract commanded was almost waterless and the people were dependent on the canal not only for their crops but also for water for drinking purposes and all domestic needs ; closures were therefore rarely possible and then only for very short periods. The excavation of the parallel channel was practically completed by the end of the cold weather of 1896-97, and between then and 1899 attempts were made to remove the dividing bank by means of powerful dredgers, with the canal flowing. But this method proved unsuccessful since, as the section of the bank was reduced, it breached irregularly, causing large silt deposits in some places and deep scour in others. Meanwhile, owing to the rapid development of irrigation, the necessity for admitting increased supplies into the canal, which was impossible so long as the obstruction remained, was growing more and more pressing, and eventually it was decided to remove the bank, which contained over 30 million cubic feet of earth, by spade and basket labour. The canal was closed for twenty days in 1899 and again for ten days in the succeeding April. Special arrangements were made for labour, and men were crowded on the bank as close as they could work. Large gangs were raised in the colonies of the tract, which rendered cheerful and material assistance. The action taken was completely successful, and at the end of the second closure the main line was clear.

Colonisation of Lower Chenab Canal Colony : Early difficulties.

349. Colonization began in 1892 and the colonists, in the earlier years, had an even harder time than usual. There was no railway to the colony, and they had consequently to march there through a country nearly as waste as that to which they were going, inhabited by tribes which showed little mercy to immigrants whom they could waylay. Many, therefore, never reached the colony at all. Those who did found the tract peopled by nomads who neither desired nor expected the canal to be a success and who were determined to do all in their power to prevent its being so. The rainfall in the previous years had been very scanty and the country presented a particularly desolate appearance, so much so that many of the colonists refused

to believe that the land was worth cultivating and returned to their homes. A serious epidemic of cholera broke out, and though those who survived and had the pluck to persevere were rewarded by an excellent crop, their troubles were not yet at an end, as the labour available was insufficient to harvest it all and, even when harvested, there was still the difficulty of the produce which had to go by the same perilous way by which the settlers came. The opposition offered by the nomads of the tract was also a constant source of trouble, and perpetual attacks were made by them on the colonists who were, for some time, unable to ward them off.

Rapid development of the colony.

350. This was, however, only a transitory phase. Once the fertility of the virgin soil of the watershed had been demonstrated there was no lack of fresh settlers, and the news of the magnificent crops which had converted the poorest colonists into men of substance in a couple of harvests spread quickly over the Province. A land hunger arose which could not easily be appeased and it became possible to pick and choose the most desirable settlers from amongst the thousands who applied. The nomads soon found the colonists more than their match. A railway for the carriage of produce was commenced in 1895, roads came rapidly into being, and towns and factories began to spring up in the former desert. In ten years the population of the tract had risen from 8,000 to 800,000. Lyallpur, the capital of the colony, is now an important city with an enormous export trade. In 1919-20 the value of the crops grown on the land irrigated by the Lower Chenab Canal was no less than Rs. 16 crores, or nearly five times the capital cost of the work, practically the whole of these crops being raised upon land which, thirty years ago, was barren waste where hardly a blade of grass would grow.

Reconciliation of indigenous inhabitants.

351. The successful settlement of the nomads of the tract deserves special mention. Their criminal ardour having being cooled by vigorous repressive measures, their disinclination to take land was gradually overcome. The belief that the canal had come to stay began to force itself upon them, and they found it advisable at least to make for themselves the best terms they could. They were treated with great liberality in the matter of grants and have long since

settled down to a peaceful agricultural life. They have acquired much knowledge from the colonists and most of them are now fair, and many of them decidedly good cultivators.

Profitable financial results from the Lower Chenab Canal.

352. The capital account of the Lower Chenab Canal stands at Rs. 327 lakhs, on which it yields an annual return of about 45 per cent. It is by far the most remunerative of the larger canals of India, and its revenue account shows an accumulated profit, after paying all interest charges and working expenses, of the enormous sum of Rs. 16,55 lakhs, which increases annually by about Rs. 130 lakhs.

The Chunian Colony.

353. One other small colony which was founded at about the same time may also be mentioned. As will be seen from the map (*fig.* 17), the tail of the Upper Bari Doab Canal runs into the dry tract and upon it and certain extensions carried out at the beginning of this century were situated nearly 100,000 acres of Government waste. This was colonized between 1894 and 1904, entirely from the more congested portions of the Lahore district in which the tract lay, and thus the Chunian colony, so called after the chief town in it, was established.

The value of colony land.

354. Some idea of the esteem in which colony land is now held may be obtained from the results of the public auctions of small blocks of such land which take place from time to time. The first auction so held was in the Lower Chenab Colony in 1892; an average price of Rs. 43 per acre was obtained which was regarded at the time as highly satisfactory. In 1919, when about 3,500 acres of waste land in the new Lower Bari Doab Colony came under the hammer, an average price of Rs. 593 per acre was realized and a maximum of Rs. 1,105 per acre. These prices were somewhat speculative and later sales indicate that the present price of the land average about Rs. 400 per acre. The flourishing condition of the people can be gauged from the fact that, in the latter colony, the price obtained for shop sites in the market towns has averaged nearly Rs. 40,000 per acre. From the point of view of all concerned the colony canals have effected their purpose. They have proved a most remunerative investment to Government, have greatly relieved the excessive pressure of the population in the congested districts of the Punjab, have

enriched the cultivators, have enhanced the general wealth of the country and have added several thousands of square miles to the agricultural area of India.

The Lower Jhelum Canal.

355. Though one of the earliest canals to be commenced, the completion of the Lower Jhelum Canal was long delayed. The canal irrigates the western portion of the watershed lying between the Jhelum and the Chenab Rivers in the Punjab, known locally as the Jech Bar, an almost rainless tract with a deep spring level, cultivation in which was practically impossible without artificial irrigation. Prior to the advent of the canal, the country was covered with a low scrub jungle, sometimes dense and elsewhere scattered and thin. Here and there were small patches of indifferent dry cultivation in local hollows where rainfall water was expected to collect ; but the chief occupations of the scanty population which inhabited the tract were limited to cattle grazing and cattle lifting. The soil was, however, known to be as a rule exceedingly fertile, needing only a regular supply of water to render the labour of cultivation extremely remunerative.

Delay in construction.

356. The original estimate for the scheme was sanctioned in 1888, and a beginning was made in the same year, the alignment of the main canal and the site of the headworks being fixed. Before, however, matters had advanced further Major Jacob's report on the extended Lower Chenab Project was received, and, in view of the certainty that the returns on that project would be larger and would come in more speedily, it was decided to give it precedence of construction and to hold the Jhelum Project in abeyance until experience had been gained on the former.

Construction relatively easy.

357. In 1897, as the Chenab Canal had advanced sufficiently, operations were commenced in earnest on the Lower Jhelum. The first thing to be done was the construction down the main line of a central channel, of one quarter the ultimate width, to provide a supply of water, which alone rendered it possible to carry on the work ; thereafter progress was rapid. Engineering difficulties were practically confined to the headworks, where considerable trouble from river floods was experienced. In the winter and spring of 1900-01 no less than three floods, unprecedented for the time of the

year, came down the river causing serious interruption and much damage both to plant and to the unfinished work, and only by means of unlimited zeal and energy on the part of those in charge were the breaches repaired and the programme of work for the year completed.

Extension of original plan.

358. The works were so far advanced that the canal was formerly opened in 1901. Many of the branches and distributaries were, however, still incomplete, and as their construction proceeded it became clear that the benefits of irrigation could be extended even further than had originally been proposed by bringing a larger area into the scope of the project and by including in it the existing Shahpur Inundation Canals, the supplies to which seemed otherwise likely to suffer owing to the proposed withdrawal of water from the Jhelum for the Triple Canals Project then under consideration. The distributary system was therefore extended and a new branch, the Shahpur Branch, added.

Conflict with private rights in Inundation Canals: Closing of Shahpur Branch.

359. The project was virtually completed in 1908 when unexpected difficulties arose in connection with the Shahpur Branch. The withdrawal of water from the Jhelum had not proved nearly so injurious to the Inundation irrigation as had been anticipated and the owners of the private canals in the tract, who were extremly jealous of their proprietary rights, refused to accept any terms of compensation which would permit of the branch being run as a financial success. Government was naturally unwilling to press the owners, against their will, to surrender their rights, and consequently the further construction of the branch was abandoned in 1916 and the money already expended upon it accepted as a loss. The long discussions, regarding the construction of this branch, account for the delay in closing the construction estimate, which was eventually done in 1917.

Headworks at Rasul.

360. The canal has its head at Rasul, where a weir 4,100 feet long was constructed across the Jhelum, on the crest of which were installed falling shutters four feet high, the majority of which were afterwards raised to six feet. Undersluices, consisting of 12 bays each of 20 feet clear span, were built on the left flank of the weir, more or less at right angles to the head regulator of the canal, which was given eight

bays of 24½ feet span, each bay being sub-divided by jack piers into three smaller openings of 6½ feet width.

Remodelling of headworks.

361. For many years after the opening of the canal, considerable trouble was experienced at Rasul in the matter of silting, shoals forming across the weir and in the sluice channel and large quantities of silt being forced into the canal. To obviate this the headworks were remodelled in several respects. The shutters were removed from the weir crest and replaced by a permanent masonry crest wall, single Stoney gates were substituted in the undersluices for the three tiers of gates formerly employed and the jack piers in the head regulator were dismantled, rising radial arm gates of 24½ feet span being fitted, which both acted as a rising cill and were capable, when necessary, of being raised sufficiently to lose the regulator vents completely.

Length of Lower Jhelum Canal.

362. The main canal has a bed width at the head of 140 feet, the full discharge capacity being 4,100 cubic feet a second, and a length of 39 miles, after which it bifurcates into the Northern and Southern branches, with a combined length of 208 miles. Nine hundred and ninety-six miles of distributaries have been constructed and about 7,600 miles of cultivators' watercourses.

The Lower Jhelum Canal Colony.

363. The canal commands a gross area of about 1½ million acres of which 1,160,000 acres are designated as culturable. Of this total, 568,000 acres were Crown Waste. Colonization began in 1902, and the opportunity was taken to assist the Remount Department by attaching horse-breeding conditions to the majority of the grants. Generally speaking, these conditions require the tenant to maintain a mare suitable for breeding Army Remounts and give Government the option of purchasing the progeny at a reasonable price, prior to its attaining the age of 18 months, the average paid in 1919-20 being Rs. 200 per head. Up to 1921, 439,000 acres out of an allottable area of 506,000 acres had been allotted; about 240,000 acres of this were either horse-breeding grants or had been made over direct either to the Army Remount Department or for regimental stud farms. The whole colony is an extremely prosperous one and Sargodha, the capital, is now a large and flourishing town.

Financial results.

364. The ultimate cost of the canal is estimated at Rs. 184 lakhs, 810,000 acres are to be irrigated annually and a return of over 19 per cent. on the capital outlay is anticipated. The work has already more than fulfilled these expectations. In 1919-20, 819,000 acres were irrigated and a return of 19⅛ per cent. was realized. Even these figures will probably be improved upon when certain channels, which do not at present command as much area as they might, have been remodelled so as further to elevate their water-surface levels above the surrounding ground surface. This remodelling work is at present in progress.

The Triple Canals Project.

365. But all previous irrigation works have been outdistanced by the great Triple Canals Project, which is the largest irrigation work executed in India up to date. It constitutes a striking monument not only to the engineering skill of those who were entrusted with its design and construction, but also to the extraordinary farsightedness of the two officers who, independently, put forward the original proposal for the scheme. Its main object is the irrigation of a tract of country known as the Lower Bari Doab lying between the Ravi and Sutlej Rivers, bounded on the south by the dry bed of the Beas, and, since the whole of the winter volume of the Ravi was already hypothecated to the existing Upper Bari Doab Canal, the Sutlej naturally appeared the most suitable source of supply to the area in question. A scheme for a canal with its head at Harike on the Sutlej, immediately below the junction of that river and the Beas, was actually prepared and submitted for sanction. It was, however, strongly opposed by two of the witnesses who gave evidence before the Irrigation Commission, Sir J. Wilson, Settlement Commissioner, Punjab, and Colonel S. L. Jacob, of Chenab Canal fame, who had recently retired from the Public Works Department. The reasons underlying the opposition of these officers to the project were, firstly, that the supplies in the Jhelum were much greater than could be utilized in the watershed between the Jhelum and the Chenab, and that the irrigation of the Lower Bari Doab represented the last possibility of turning them to beneficial use and, secondly, that the Sutlej water would certainly be required in days to come for the further development

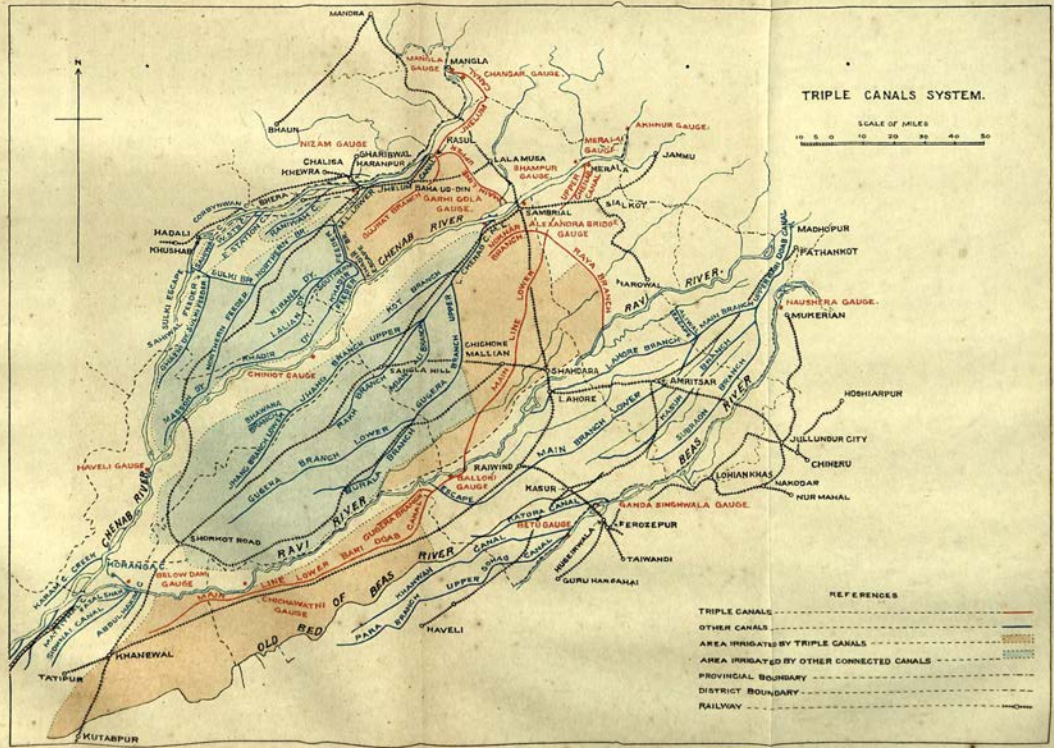
and extension of irrigation on either side of the latter river. The Irrigation Commission were so impressed with these views that they issued an *ad interim* report, recommending that this aspect of the case should be thoroughly examined before the project for the canal from Harike was finally sanctioned. The result of this examination was the preparation of the Triple Canals Project, by means of which the surplus water of the Jhelum is transferred into the Lower Bari Doab. The farsightedness of the original instigation of the scheme on these lines has now borne fruit in that thereby the great Sutlej Valley Canal Project, which is described below, has also been rendered possible. Had the Sutlej water been taken into the Lower Bari Doab, development of irrigation in the Sutlej Valley would have been at an end.

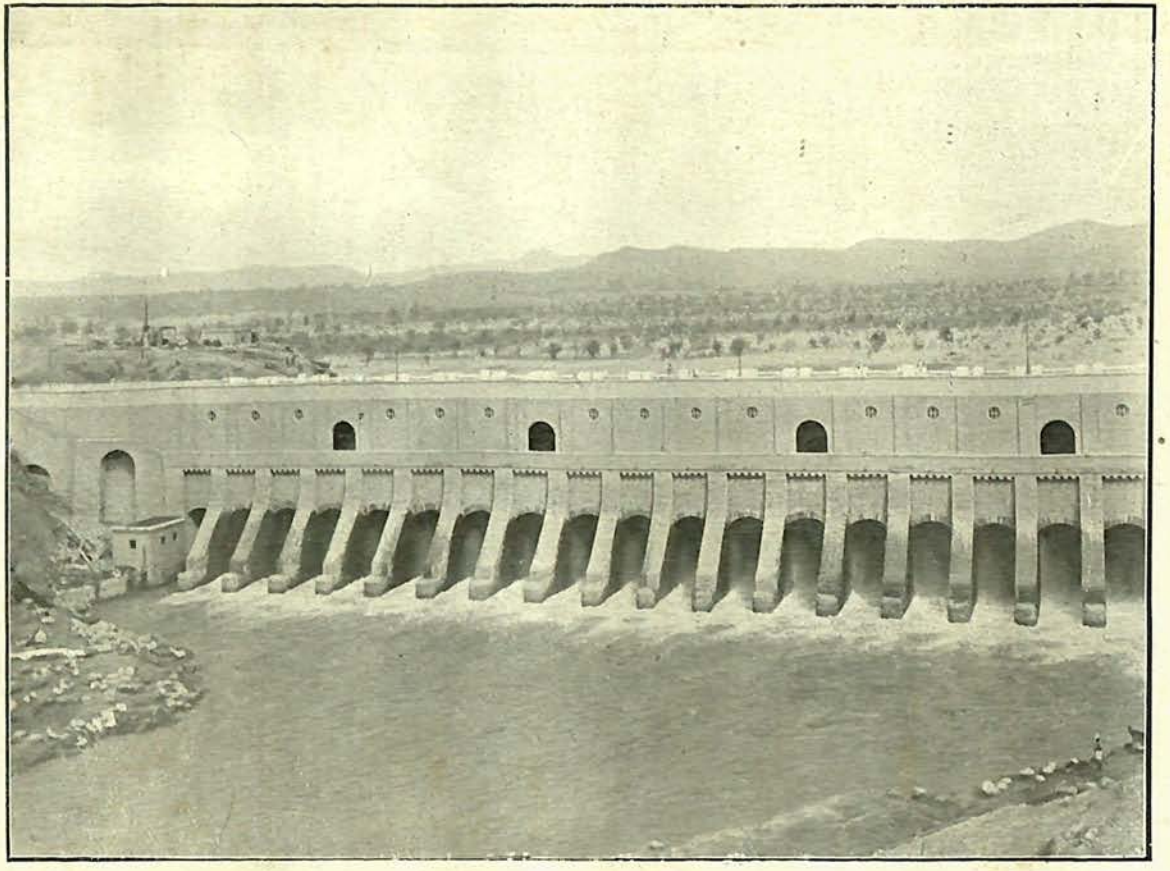
Method of transfer of the Jhelum water into the Bari Doab.

366. The accompanying map (*fig.* 19) shows clearly how the transfer of the water was effected. A regulator was constructed at Mangla on the Jhelum at a point where the river rendered the provision of a weir unnecessary. From Mangla the Upper Jhelum Canal carries the Jhelum water into the Chenab, discharging it into the latter above the headworks of the Lower Chenab Canal at Khanki. The Lower Chenab Canal is thus fed with Jhelum water and the Chenab water so freed is taken, from a new headworks situated at Merala, 36 miles above Khanki, into the Upper Chenab Canal, the second link of the Triple Canals. This canal runs southwards to the Ravi, which it crosses on the level at Balloki ; below Balloki it is known as the Lower Bari Doab Canal.

The Upper Jhelum Canal.

367. In so far as the surmounting of engineering difficulties is concerned the Upper Jhelum Canal must, of the three sections of the project, be given pride of place. The head regulator, which has to deal with a river having a difference of 51 feet between low water level and maximum flood surface, is a massive dam, rising 69 feet above the canal bed, and 96 feet above lowest foundation level. There are 20 vents in it, each of 12 feet clear span, with piers six feet wide between, the regulation being effected by three tiers of gates working one above the other. The canal has a bed width of 150 feet and for the first 1,600 feet of its course, through the so-called Mangla Cut, is in heavy digging, the maximum depth


TRIPLE CANALS SYSTEM.
SCALE OF MILES
10 5 0 10 20 30 40 50
N
MANDRA
MANGLA
MANGLA GAUGE
CHANSAR GAUGE
JHELUM
BHAUN
NIZAM GAUGE
RASUL
MERALA GAUGE
AKHNUR GAUGE
CHALIGA KHEWRA
GHARIBWAL HARANPUR
LALA MUSA
SHAMPUR GAUGE
MERALA
JAMMU
DOBBYWHAN
BHERA
UPPER JHELUM CANAL
BAHA UD-DIN
GARHI GOLA GAUGE
SIALKOT
HADALI
KHUSHAB
SULHI BR.
KHAIRA BR.
NORTHERN BR.
MANKERA BR.
SULHI ESCAPE
SUKHEKI FEEDER
SUKHEKI ESCAPE
SULHI FEEDER
MANKERA FEEDER
KHAIRA FEEDER
SUKHEKI BR.
SULHI BR.
KHAIRA BR.
MANKERA BR.
SUJHAL BRANCH
CHENAB RIVER
SAMBRIAL
ALEXANDRA BRIDGE GAUGE
RAVA BRANCH
MADHOPUR
PATHANKOT
NAROWAL
RAVI RIVER
NAUSHERA GAUGE.
MUKERIAN
CHICHOKE MALLIAN
SHAHDARA
AMRITSAR
LAHORE
HOSHIARPUR
JULLUNDUR CITY
CHINIOT GAUGE
KHADIR
JHANG BRANCH
RAVI BRANCH
LOWER
KANGLA NULL
KHURIA BRANCH
MAIN BRANCH
LOWER
MAIN BRANCH
LAHORE BRANCH
BEAS BRANCH
SIDHNAI BRANCH
BEAS RIVER
CHINIOT
SUKHEKI BRANCH
JHANG BRANCH
RAVI BRANCH
LOWER
MAIN BRANCH
LOWER
CHINIOT BRANCH
CHENAB RIVER
HAVELI GAUGE
GUGERA BRANCH
RAIWIND
GALLOO GAUGE
KASUR
CHICHAWATNI GAUGE
MURAD BRANCH
GUGERA BRANCH
CHICHAWATNI
MAIN BRANCH
LOWER
BARI DOAB CANAL
KATORA CANAL
BEDIAN CANAL
GANDA SINGHWALA GAUGE.
FEROZEPUR
SHORKOT ROAD
RAVI RIVER
BEAS RIVER
HARAPPA
BELOW DAMS GAUGE
MAIN LINE LOWER BARI DOAB CANAL
SUTLEJ
SOHAG CANAL
HUSENIWALA
TAIWANDI
GURU HARSAHAI
UPPER JHELUM CANAL
CHICHAWATNI GAUGE
OLD BED OF BEAS
PAKA BRANCH
KHANKHAH
HAVELI
KHANEWAL
TATIPUR
KUTABPUR
REFERENCES
TRIPLE CANALS
OTHER CANALS
AREA IRRIGATED BY TRIPLE CANALS
AREA IRRIGATED BY OTHER CONNECTED CANALS
PROVINCIAL BOUNDARY
DISTRICT BOUNDARY
RAILWAY



Head of Upper Jhelum Canal.

being 110 feet. It runs for 62 out of the 89 miles of its length along the slope of the Pabbi hills, passing in quick succession through deep cuttings and over high embankments and crossing the whole of the drainage of the range. In all no less than 60 drainages cross the alignment, which are dealt with by level crossings, syphons, culverts or inlets as the circumstances of each dictated. There are three level crossings which pass the canal across the Suketar No. I, Suketar No. II and Jabah torrents respectively. They are all of similar design, and differ only in the lineal waterway afforded for the passage of floods. In the case of the larger Suketar an inlet having 18 bays of ten feet each admits the canal into the torrent bed, where a barrage, 1,582 feet long and provided with 33 bays each of 40 feet span, fitted with lift gates by raising which floods can be passed, directs the water to the further side. A regulator, with 17 bays of 20 feet each, re-admits it into the canal. The barrages at the other two level crossings have each 16 bays also of 40 feet span.

The Bhimber torrent diverted.

368. The Bhimber torrent, with a flood discharge of 35,000 cubic feet a second, crossed the canal alignment in the 83rd mile and, after a careful consideration of all the circumstances, it was decided to divert this formidable river into the Chenab in a combined channel carrying the canal supply also. The width of the excavated channel is 1,000 feet, but the banks have been set back so as to make a width of 1,300 feet available for floods.

The Upper Chenab Canal.

369. The Upper Chenab Canal is the largest perennial irrigation canal in the world. Its head is at Merala, where the Chenab is spanned by a weir 4,070 feet long, upon the crest of which are fitted falling shutters, 6 feet high. On the right flank of the weir are the undersluices, consisting of eight spans each 31 feet in width, and at right angles to the undersluices is the head regulator of the canal, with 12 spans 24½ feet wide. The Canal has a bed width at the head of 240 feet and a full supply depth of 11·1 feet at which depth 11,700 cubic feet a second are carried. In the twenty-seventh mile it trifurcates, the Nokhar Branch being thrown off on the right and the Raya Branch on the left, the main canal proceeding southwards towards the Ravi. There are twelve drainage crossings in the portion of the canal above

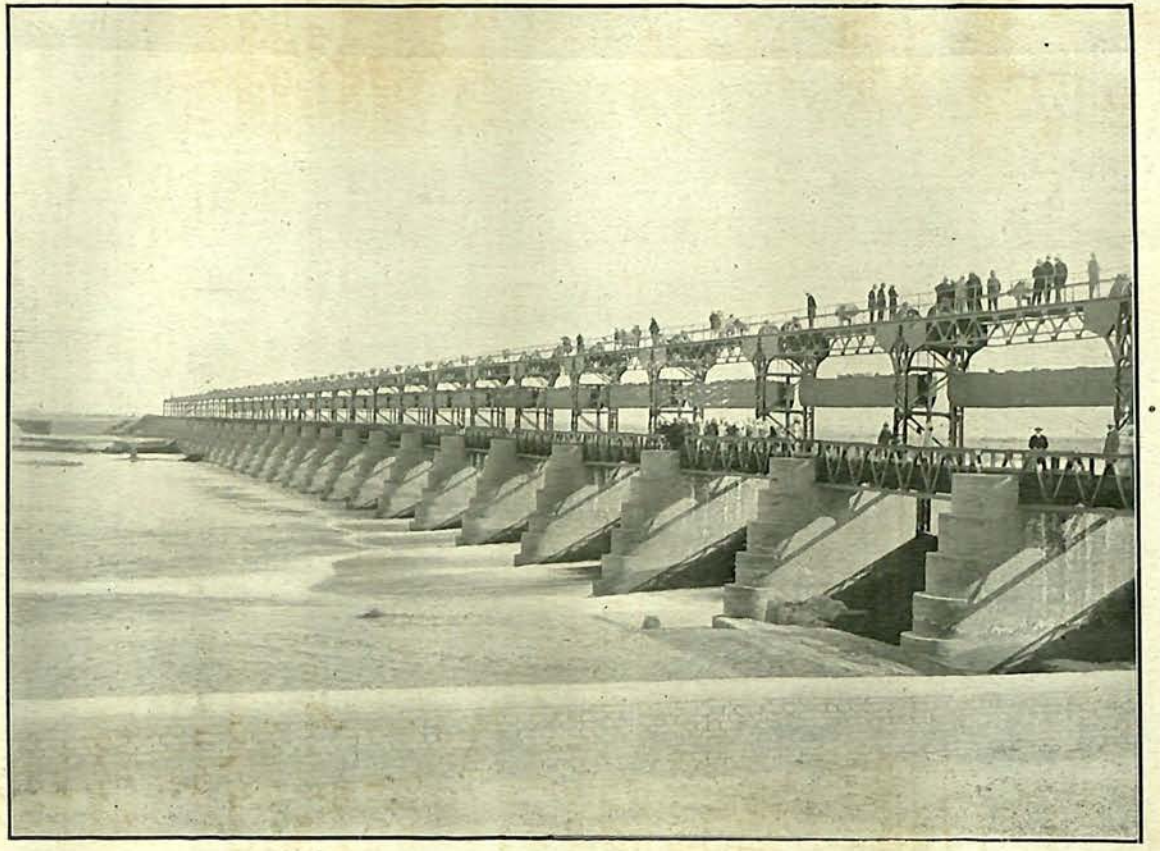
the trifurcation, the works provided for which are noteworthy on account of the extensive use which was made of reinforced concrete in their construction. Between the seventieth and eightieth miles a group of drainages, known as the Deg Nullah, had also to be negotiated. Their combined discharge is 35,000 cubic feet a second, and, in order to obviate an additional number of expensive crossings, the whole nullah was diverted into the Ravi by means of an artificial cut with an embankment on its downstream side, the cut being thus open to the main drainage channels and to any surface spills that may occur. The canal tails into the Ravi in its hundred and twentieth mile.

The Balloki Level Crossing.

370. The crossing of the Ravi by means of a level crossing has given rise to the largest work of its kind yet constructed. The Balloki Level Crossing comprises an inlet, combined with the tail fall of the Upper Chenab Canal, a barrage across the river, and the head regulator of the Lower Bari Doab Canal on the other side. The barrage is 1,647 feet long and consists of 35 bays each of 40 feet clear span, divided by piers $7\frac{1}{4}$ feet wide. An impervious floor stretches for 205 feet upstream and for 110 feet downstream of the gates with flexible aprons beyond these. The piers, which are carried on wells sunk 18 feet below the floor of the barrage, rise to a height of $23\frac{1}{3}$ feet in solid masonry and upon them steel trestles, 18 feet high, are erected to support the operating platform which carries the machinery and gearing for raising the gates. The work is designed to pass the flood discharge of the Ravi, computed at 150,000 cubic feet a second, with a freeboard of 5 feet. The head regulator of the Lower Bari Doab Canal, on the left of the barrage, has 15 bays each of 20 feet clear span.

The Lower Bari Doab Canal.

371. The Lower Bari Doab Canal is 195 feet wide and carries a discharge of 6,750 cubic feet a second. The main line is 134 miles long; there is only one major drainage crossing, this being the aqueduct at the 12th mile where the Hudhiara drainage and the Vahn escape channel from the Upper Bari Doab Canal are crossed by the Lower Canal. The original estimate of the project was sanctioned in 1905 and operations commenced simultaneously on all the canals in that year. As was inevitable in the case of a work of this magnitude an enormous amount of detailed investigation had to be under-



Balloki Level Crossing.

PUNJAB CANALS.

AREA IRRIGATED DURING PERIOD OF DEVELOPMENT.

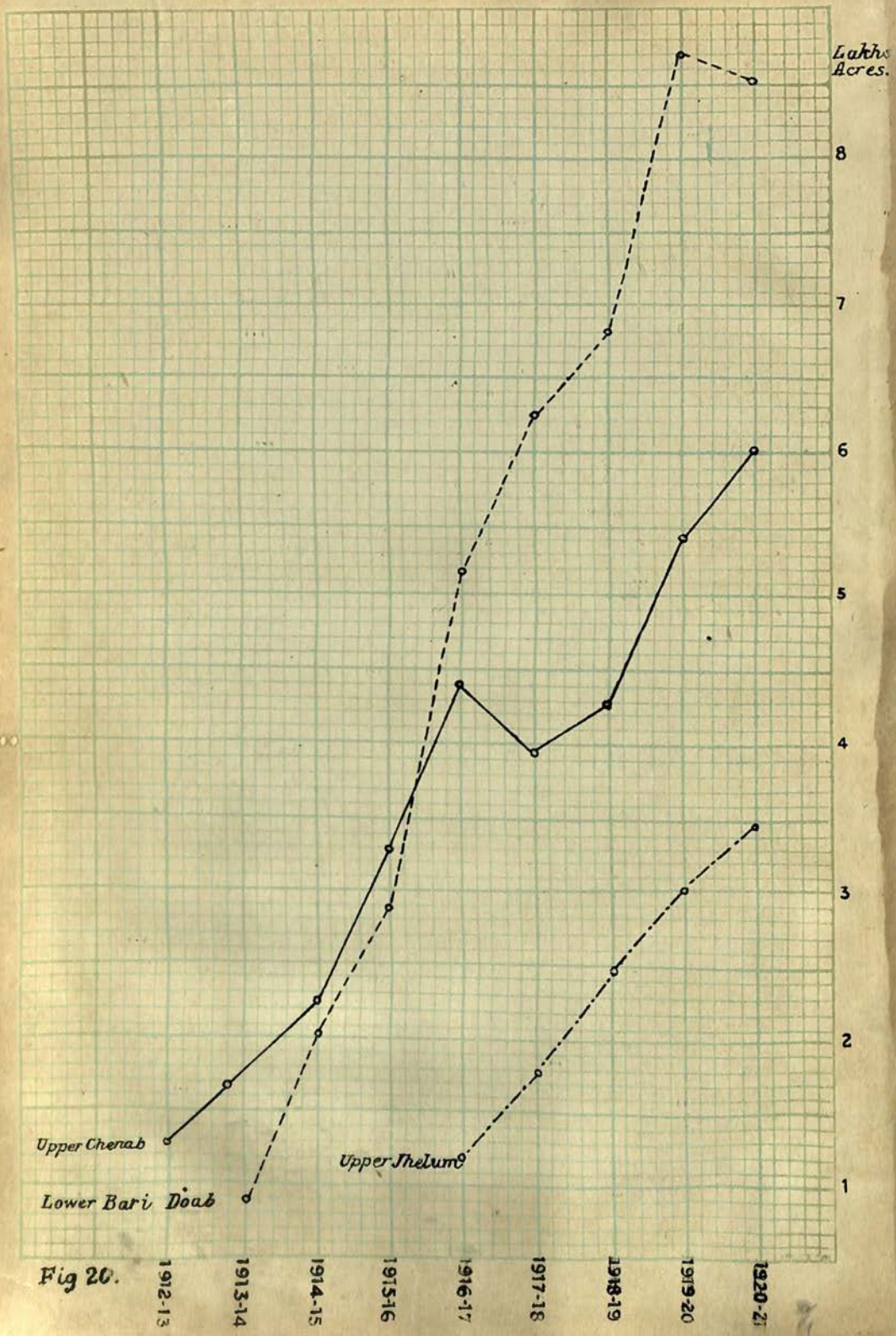


Fig 20.

taken before the final arrangements could be settled and means devised to meet the unexpected conditions which presented themselves. The work was, however, carried to completion at what, in all the circumstances of the case, was a most satisafctory speed. Each section of the scheme was opened as it was practically finished, the Upper Chenab Canal in 1912, the Lower Bari Doab Canal in 1913 and the Upper Jhelum Canal in 1915. The whole work was not, however, fully completed until 1917. It now consists of 433 miles of main canals and branches and 3,010 miles of distributaries.

Area commanded by Triple Canals Project: four million acres.

372. The total area commanded by the project is four million acres, and it is proposed that 1,675,000 acres shall be irrigated annually of which 345,000 acres will be on the Upper Jhelum, 480,000 acres on the Upper Chenab and 850,000 acres on the Lower Bari Doab Canal. There is no fear of these results not being realized. Already, in 1919-20, 1,711,000 acres were irrigated by the project, the Upper Chenab and Lower Bari Doab Canals exceeding their forecast figures by 63,000 and 19,000 acres respectively. The Upper Jhelum Canal is still 46,000 acres below the ultimate area expected of it.

Colonisation.

373. The Triple Canals scheme has brought a further huge extent of waste land under cultivation. Of the area commanded, 1,570,000 acres were classed as Crown waste, 43,000 acres being on the Upper Jhelum, 85,000 acres on the Upper Chenab and 1,442,000 acres on the Lower Bari Doab. Of this area 1,490,000 acres were available for allotment. Colonization has been going steadily forward and, up to the end of September 1920, 880,000 acres had been allotted, including areas reserved for horse-breeding and other purposes. The areas available on the two upper canals have been allotted almost in full, most of the unallotted balance being in the Lower Bari Doab Colony. A considerable proportion of this unallotted balance is reserved for soldier grantees and, pending their arrival, has been let out for what is known as " temporary cultivation," a temporary tenant being permitted to cultivate the land until it is finally allotted. 44,200 acres were so leased in the Lower Bari Doab Colony in 1920, being over 70 per cent. of the unallotted land.

Financial returns from project.

374. The total cost of the project is now estimated at Rs. 10·6 crores, including the cost of certain improvements still remaining to be carried out, and an eventual return of nearly 8 per cent. on capital is anticipated. This, however, is merely that portion of the return which will accrue to the State in a measurable and direct form, and in no way represents the vast indirect benefits which will result from the scheme. The value of the crops which were raised on land irrigated by the system in 1919-20 was estimated at no less than Rs. 9 crores, the bulk of which is a new accretion to the wealth of the province, and nearly 2,500 square miles of waste land is, for the first time, now being brought under the plough.

The Sutlej Valley Project.

375. The Sutlej Valley Project is the direct outcome of the great Triple Canals Project. To understand the scheme, it is necessary to realize the conditions at present prevailing in the Sutlej Valley. There are, on either bank of the Sutlej, both in the Punjab and in the Indian State of Bahawalpur, long series of inundation canals, which draw their supplies from the river whenever the water level is high enough to permit of it. These canals are liable to all the drawbacks which invariably attend inundation irrigation. There are no weirs at their heads and, in many cases, no means of controlling the volumes entering them. Consequently, while a supply is assured in a normal year during the monsoon months, it is liable to serious fluctuations according to the seasonal conditions. In a year of inferior rainfall little water enters the canals; in a year of high supplies they are liable to grave damage by floods. Generally speaking, they commence to irrigate during May, when a small supply is usually received ; by September the volume has, in a normal year, fallen once again to an inconsiderable quantity. But, even in these adverse conditions, these works are of great value and irrigate an average area of no less than a million and a half acres in the tract to be commanded by the Sutlej Valley Project.

Non-perennial and perennial canals.

376. The object of the project is threefold. Firstly, it is proposed, by the provision of weirs and head regulators, to afford to the existing canals a controlled supply from the beginning of April to the middle of October, rendering them

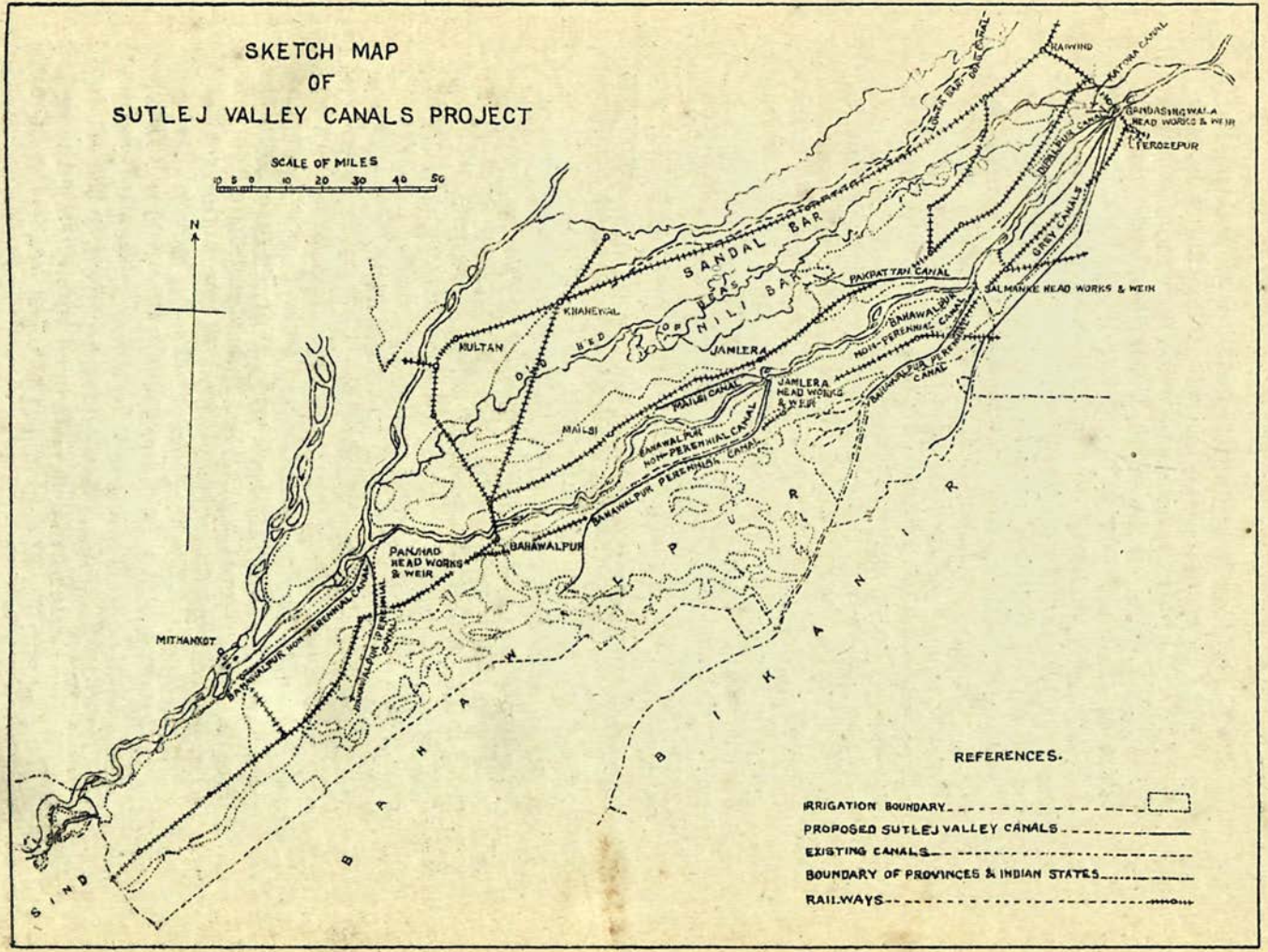

SKETCH MAP
OF
SUTLEJ VALLEY CANALS PROJECT
SCALE OF MILES
10 5 0 10 20 30 40 50
N
SANDAL BAR
NILI BAR
OLD BED OF BEAS
KHANEWAL
MULTAN
JAMLERA
MAILSI
MAILSI CANAL
JAMLERA HEAD WORKS & WEIR
BAHAWALPUR NON-PERENNIAL CANAL
BAHAWALPUR PERENNIAL CANAL
PAKPATTAN CANAL
SALMANKE HEAD WORKS & WEIR
BAHAWALPUR NON-PERENNIAL CANAL
BAHAWALPUR PERENNIAL CANAL
BAHAWALPUR
PANJNAD HEAD WORKS & WEIR
MITHANKOT
BAHAWALPUR NON-PERENNIAL CANAL
BAHAWALPUR PERENNIAL CANAL
SIND
BAHAWALPUR
BIKANIR
RAIWIND
KATORA CANAL
BANDASINGWALA HEAD WORKS & WEIR
FEROZEPUR
DIPALPUR CANAL
GREY CANALS
REFERENCES.
IRRIGATION BOUNDARY
PROPOSED SUTLEJ VALLEY CANALS
EXISTING CANALS
BOUNDARY OF PROVINCES & INDIAN STATES
RAILWAYS

Fig: 21

immune from the present detrimental effect of seasonal fluctuations in the water level and thus converting them from the status of inundation to that of non-perennial canals, by non-perennial canals being understood canals to which a supply is assured during the hot weather and monsoon, though they are closed during the cold weather, when the volume in the river is low. Secondly, the areas irrigated by the existing canals are to be extended so as to embrace the whole low-lying area in the river valley. Thirdly, perennial irrigation, that is to say irrigation throughout the year, will be given to large tracts in the uplands on either bank, in the Punjab on the north and in the States of Bahawalpur and Bikaner on the south, these tracts being at present entirely unirrigated and, in consequence of the very low rainfall, waste. The system of dividing the irrigation into perennial and non-perennial ensures the best use being made of the water available. Only 7,000 cubic feet a second are available during the cold weather, when the supplies are low, whereas a maximum of 48,500 cubic feet a second will be drawn off during the hot weather and monsoon when, owing to the melting of the snows and the rainfall in the catchments of the rivers, water is plentiful.

377. The project consists of four weirs, three on the Sutlej and one on the Panjnad, as the Chenab is called below its junction with the Sutlej, with twelve canals taking off from above them. This multiplicity of weirs and canals may seem to be a peculiar feature of the proposals unless the immensity of the whole scheme is considered. The project really consists of four interconnected systems, each of the first magnitude ; each weir will control about one and a quarter million acres of irrigation, the total annual irrigation from all the weirs being nearly three times that contemplated under the Triple Canals Project, the largest system constructed in India up to date. It has moreover been found economical, in order to obviate the loss of water entailed in carrying small supplies in very large channels, to provide separate canals for the perennial and non-perennial irrigation, the existing inundation canals being linked to the latter. The total area to be irrigated from the project is five million acres. Of this two million acres will be perennial and three million acres non-perennial irri

Irrigation proposed thrice as large as that of Triple Canals system.

gation. 1·9 million acres will be in British territory, 2·8 million acres in Bahawalpur and ·3 million acres in Bikaner.

Financial advantages of project.

378. The total cost of the project is estimated at Rs. 14½ crores. Upon this a return of 12¾ per cent. is anticipated from water-rates alone. But the scheme has another, and even more important source of revenue. On the introduction of irrigation, no less than 3¾ million acres of desert waste, the property of the three parties concerned, at present valueless, will become available for colonization and sale. It is customary, in the *pro-forma* accounts of irrigation projects, to credit a scheme with the interest on the sale-proceeds of Crown waste lands rendered culturable by its construction ; if this is included, the annual return of the project will amount to nearly 38 per cent. It bids fair, indeed, to rival the Lower Chenab Canal, the return from which during the past seven years has averaged over 41 per cent.

Sutlej Valley Project sanctioned (1921).

379. After receiving assurance that the project had been approved by the Punjab Legislative Council and that the Punjab Government and the States concerned were in a position to finance the scheme, the Secretary of State on the 9th December 1921 sanctioned the immediate commencement of work upon it. The project is now being administered by a separate Chief Engineer appointed to the post.

Other works projected: The Thal Canal Project.

380. In addition to the above there are several other projects under the consideration of Government for the construction of new canals or Irrigation schemes in the Province. The Thal Canal Project provides for the construction of a perennial canal offtaking from the Indus at Kalabagh to irrigate the entire Sind Sagar Doab down to the irrigation boundary of the Muzaffargarh Inundation Canals. It covers a gross area of five million acres or about one-twelfth of the gross area of British Territory in the Punjab. The project is estimated to cost Rs. 9.3 crores, to give an irrigated area amounting to nearly two million acres, and to yield a return of about 18 per cent. on the total capital outlay.

The Bhakra Dam Project.

381. The Bhakra Dam Project provides for the construction of a Reservoir Dam 400 feet high on the River Sutlej at Bhakra where that

river finally emerges from the Himalayas. The capacity of the Reservoir will be 120,000 million cubic feet or $2\frac{3}{4}$ million acres feet. The project involves the enlargement of the existing Sirhind Canal and the construction of a weir on the Sutlej river below Phillour, from which point a new canal will be constructed to take up a portion of the irrigation of the existing Sirhind Canal. A new channel will be constructed from the tail of the existing Sirhind Canal, Main Line, across to the Sirsa Branch of the Western Jumna Canal and will supply that Branch at Mundri and take up the irrigation of all the unirrigated land up to the limits of command. The supply in the Western Jumna Canal thus set free, the Sirsa Branch will be utilized for the irrigation of all the unirrigated land south-west of the Western Jumna Canal up to the limit of command, and to increase the intensity in existing channels. The project is estimated to cost about $14\frac{1}{2}$ crores; to give an increase of irrigated area of over two million acres, and to yield a return of 7 per cent. on the capital outlay. The magnitude of this project may be judged from the fact that the Assuan Dam across the river Nile in Egypt impounds only 36,000 million cubic feet of water.

The Haveli and Woolar Lake Barrage Projects.

382. The Haveli Project provides for the construction of a weir and canal headworks, on the river Chenab, just below its confluence with the river Jhelum, from which point two canals will offtake in order to assure the existing Inundation Canals and to extend the area under irrigation. It is expected to yield a return of 6 per cent. on a capital outlay of Rs. 2 crores. This can only be taken up after the Panjnad weir of the Sutlej Valley Project is built. The Woolar Lake Barrage Project provides for the construction of a Barrage on the river Jhelum at Sopor, just below its exit from the Woolar Lake in Kashmir, the object being to impound water in that lake, during the summer, for use in the winter by the Punjab Canals offtaking from the Jhelum and the Chenab rivers. This project still forms the subject of negotiation with the Kashmir Darbar.

Discharge Division formed.

383. In connection with these projects a new Discharge Division has been formed under the direct control of the Chief Engineer. The object aimed at is to gauge the discharges of all Punjab

rivers at various sites on each so as to obtain as accurate results as possible for a determination of the natural supply in the Indus and its tributaries and of the diminution or increase which takes place in these supplies on the withdrawal of water for irrigation in the Punjab and the drainage of a portion of such withdrawals back into the rivers. Information will be obtained as to the losses or gains which occur from absorption or percolation in flow with special reference to the supplies which are available in the Indus River for distribution between the Punjab and Sind. Current meters are now being provided at the more important sites and it is hoped that a high degree of accuracy will be obtained. The scope of the division is being extended so as to include research work of practical utility. The work of other branches of the Department will also be co-ordinated to this aim.

Methods taken to combat water-logging.

384. The evil of waterlogging is being tackled by the Department. It is very difficult to prevent seepage from high level canals passing through low-lying country. The method adopted is to intersect such areas with surface drains and so to divert the seepage water into natural drainage channels. Local *zamindars*, however, more anxious for their own personal profit than the public good, often hamper this work by putting obstructions in the drains in order to secure flow irrigation during the *kharif*. Since the construction of these drains there has been a marked improvement and areas previously waterlogged are again coming under the plough.

Summary of advantages gained from Canal irrigation.

385. The agricultural development of the Province from these great constructive works is shewn graphically in *figs.* 20 and 22. The canal-irrigated area of the Punjab is now equal to the total ploughed area of England and Wales. The financial advantage to Government from these undertakings has already been discussed (*paras.* 127, 128). The Lower Chenab Canal is paying 45 per cent. on the Rs. $3\frac{1}{4}$ crores invested in it, the Lower Jhelum 19 per cent. on Rs. 1·7 crores, the Upper Bari Doab 16 per cent. on Rs. $2\frac{1}{4}$ crores and the Sirhind $11\frac{1}{2}$ per cent. on Rs. $2\frac{1}{2}$ crores. It would be difficult to find such a profitable investment elsewhere. This of course leaves out of count the other revenue that Government derives from the Canal

PUNJAB CANALS.

CANAL IRRIGATED AREA IN PUNJAB—1887—1921.

Note.—Area canal irrigated in 1920-21 (10·5 million acres) is equal to total ploughed area in England and Wales.

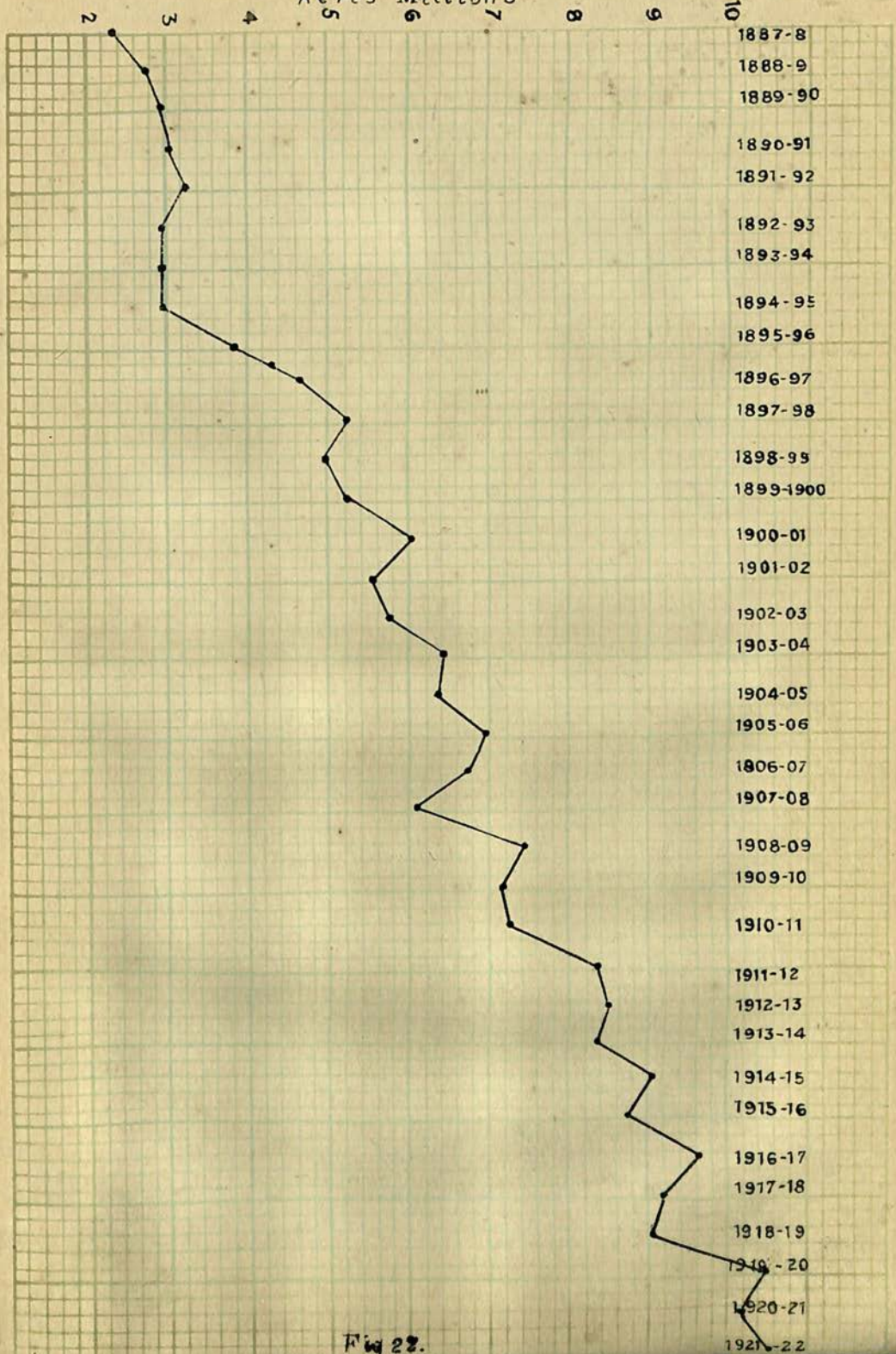


Fig 22.

PERENNIAL AND INUNDATION CANALS.

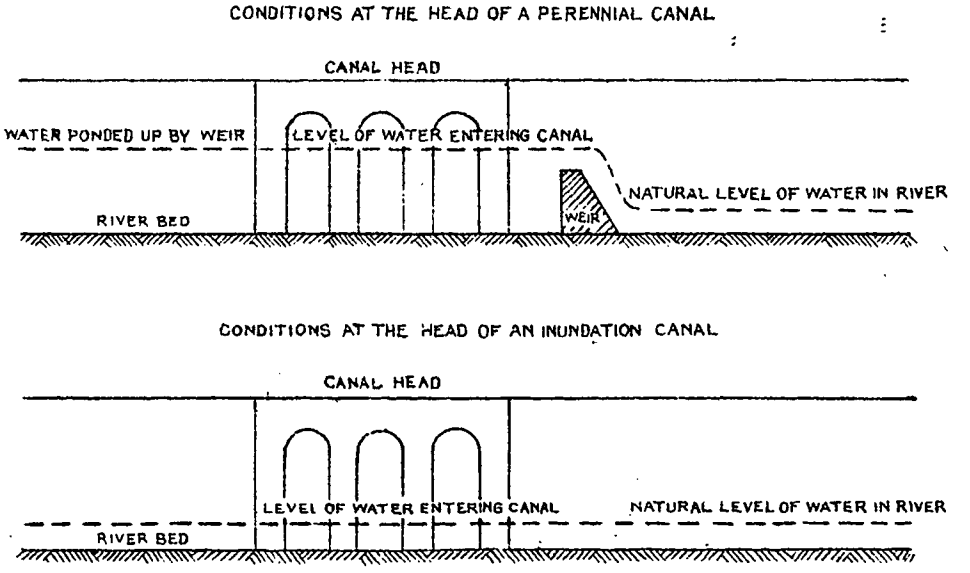

CONDITIONS AT THE HEAD OF A PERENNIAL CANAL
CANAL HEAD
WATER PONDED UP BY WEIR
LEVEL OF WATER ENTERING CANAL
NATURAL LEVEL OF WATER IN RIVER
RIVER BED
WEIR
CONDITIONS AT THE HEAD OF AN INUNDATION CANAL
CANAL HEAD
LEVEL OF WATER ENTERING CANAL
NATURAL LEVEL OF WATER IN RIVER
RIVER BED

Fig. 23.

Colonies, all ultimately due to the Irrigation Department. And the Government receipts are but a fraction of the total increase of wealth to the people of the Punjab.

Ratio of area irrigated to area commanded.

386. Canals are usually so designed as to irrigate annually from one-third to three-quarters of the culturable area commanded by them and the various portions come under irrigation in turn, the remainder lying fallow or being sown with the more drought-resisting crops. But the whole area benefits from the rise of the sub-soil water level due to the introduction of irrigation and from the additional moisture of the air, and it is probably fairly correct to say that the area benefited by canal irrigation is some 2½ times the area actually irrigated annually. Looked at in this light, some 25 per cent. of the whole cropped area in British India is benefited and protected by Government irrigation works.

Distinction between perennial and inundation canals.

387. The canals which rely upon the natural flow of the rivers for their supplies may be divided into two main types, perennial canals and inundation canals. Perennial canals are provided with some arrangement in the vicinity of their heads, usually in the form of an obstruction across the bed of the parent stream, by means of which they are enabled to obtain water in the river. The water, is, by means of this obstruction, ponded up to the height required in the canal, and seasonal fluctuations in the water level in the river are thus counteracted. The obstruction usually takes the form of a weir or barrage fitted with shutters and sluices whereby surplus water, not needed in the canal, can be escaped down the river. Inundation canals, on the contrary, have no such weirs and their supplies fluctuate with the natural water level in the river. When this rises, the level in the canal rises, when it falls, the level in the canal falls with it. The diagram (*fig.* 23) illustrates clearly the difference between the conditions at the head of a perennial and of an inundation canal. Generally speaking, inundation canals obtain a supply only when the parent stream is in flood and the adequacy or otherwise of this supply, and therewith the area irrigable in the year in question, is consequently solely dependent upon the seasonal conditions. There may be an ample volume in the river but, in the absence of any method of raising its level, it

cannot be forced into the canal until the water rises, of its own accord, to a sufficient height.

Financial classification of irrigation works.

388. Prior to the 1st April 1921, irrigation works were classified under three heads for the purpose of the allotment of funds, namely, productive, protective and minor works. Of these only productive works could be financed from loan funds. Before a work can be classed as productive it has to satisfy the conditions that it should, within ten years of the completion of construction, produce sufficient revenue to cover its working expenses and the interest charges on the capital cost. Protective works are those which are constructed primarily with a view to the protection of precarious tracts and to guard against the necessity for periodical expenditure on the relief of the population in times of famine. They were financed from the current revenues of India and are usually not directly remunerative. Minor works comprised those which are not classed as productive or protective. The majority were indigenous works which Government has taken over, improved and maintained, such as the inundation canals referred to above.

Classification under the Reforms.

389. With the introduction of the Reforms the classification of irrigation works has been altered ; as it will, in future, be possible to finance any work of public utility from loan funds. The classes of protective and minor works have been abolished ; all works being classified as either productive or unproductive without reference to the source whence the funds for their construction are provided. The two main categories into which irrigation works are now divided are however quasi-commercial and non-commercial works. Quasi-commercial works are those for which capital accounts are kept and include the great majority of the canals of the Province. Non-commercial works are those for which no such accounts are kept and they are confined to a few inundation canals. Expenditure on survey and other preliminary investigations in connection with irrigation and drainage projects are also included under this head. The Province has to pay interest on all irrigation capital expenditure made previous to the Reforms. New capital expenditure will have to be met

from loans raised by the Province, either directly or through the Government of India.

The Irrigation Department.

390. The Irrigation Branch of the Public Works Department is administered by three Chief Engineers. Four Under-Secretaries and a Personal Assistant are employed at headquarters to deal with departmental work. The Circles of Superintendence are at present sixteen in number. There are also two independent Divisions in the Sutlej Valley Project—(1) The Railway Division and (2) The Quarries Division. The headquarters of the former are at Doraha and of the latter at Rupar. Besides these there is an independent Discharge Division at Lahore for observing and recording discharges at important sites of the rivers (*para.* 383).

Assessment of water-rate.

391. In addition to maintaining all the canals in its charge, the Irrigation Branch is responsible for the assessment of the water rate leviable on irrigated areas, and in several districts where the land revenue demand is assessed on the fluctuating principle, for the formulation of this demand on irrigated crops also. It has however been proposed to try the experiment on one canal of having this assessment made by the Land Revenue authorities. For maintenance purposes the Sub-Division is divided into sections in charge of Overseers or Sub-Overseers. For revenue purposes there is a separate division into sections in charge of a *zilladar*, each section being sub-divided into canal *patwari's* circles. The revenue establishment of a Division is supervised by a Deputy Collector who is generally a 2nd class Magistrate.

Watercourses maintained by cultivators.

392. The basis of Irrigation Administration is co-operation between Government and the cultivator. Up to a certain point Government retains control ; beyond that point matters are left to the users of the water. The headworks of the canal, the main line and branches, the distributaries and minor distributaries, are all constructed and maintained by Government, but the field channels or watercourses, by means of which the water is finally conveyed on to the fields, are usually constructed and invariably maintained by the cultivators themselves. Water is emitted from the Government canals through outlets built in their banks, and it is

in general at these outlets that the responsibility of Government ends and that of the cultivator begins.

Watercourses now often constructed by Government

393. There has, however, lately been a tendency on the newer canals for Government to construct the watercourses on behalf of the cultivators. The efficiency of a watercourse depends primarily upon its correct alignment, and to secure this requires technical skill. Even the cultivator who is accustomed to irrigation cannot be expected to select as good a line as an engineer equipped with instruments of precision. Where Government constructs the watercourses, they remain the property of the irrigators, the cost being usually recovered from them in easy instalments, often by the imposition for a term of years of a small acreage rate on the irrigation thus effected.

Distribution of water.

394. The responsibility for the distribution of water is similarly shared between Government and the irrigators, the former distributing the water as far as the outlets, and the latter doing the final distribution from the watercourses to the various fields. In cases in which a watercourse is shared between two or more cultivators and they are unable to agree as to an equitable distribution of the water between them, a right of appeal lies to the Irrigation Officer who can then step in and enforce suitable arrangements for the sharing of the supply.

Proposed payment for water at volumetric rates.

395. One of the chief practical difficulties of canal irrigation is the equitable distribution of water-supply. If land-owners would cooperate, payment for water by volume instead of by area irrigated should prove a more satisfactory method both for them and the Irrigation Department. Special contracts on these lines were entered into this year with three land-owners on the Lower Bari Doab Canal and it is hoped that this method may become increasingly popular.

Water-rates.

396. The water-rate charged varies considerably with the crop grown, and is different in each province and often upon the several canals in a single province. Thus in the Punjab, they vary from Rs. 7-8-0 to Rs. 12 per acre for sugarcane, from Rs. 4 to Rs. 7-8-0 per acre for rice, from Rs. 3-4-0 to Rs. 5-4-0

per acre for wheat, from Rs. 3 to Rs. 4-4-0 per acre for cotton and from Rs. 2 to Rs. 3-4-0 per acre for millets and pulses. No extra charge is made for additional waterings. Practically speaking, Government guarantees sufficient water for the crop and gives it as available. If the crop fails to mature, or if its yield is much below normal, either the whole or part of the irrigation assessment is remitted.

CHAPTER XIII.

EDUCATION.

Education in India: literary rather than vocational.

397. It is sometimes forgotten that the system of English education was not forced upon India by the Government, but established in response to a demand that was real and insistent, though it proceeded from a limited class. The higher castes of Hindus, Brahmans, Kayasths, and a few others had for generations supplied the administrative body of India, whatever the nationality of the rulers; and the introduction and development of British rule inspired these classes to qualify themselves for a continuance of their hereditary careers under the new conditions. It was somewhat easily assumed in the time of Macaulay that Western education once imparted to the higher classes of India would gradually, but steadily, permeate the whole population. In the event it has been distributed unevenly among the higher classes themselves, the agricultural community as a whole having until very recently been backward in taking advantage of educational facilities. Indeed some of the most difficult factors of the present situation would have been avoided if steps had been taken in good time to prevent the wide divorce which has occurred between the educated minority and the illiterate majority. From the economic point of view India has been handicapped by the want of professional and technical instruction; her colleges turn out numbers of young men qualified for Government clerkships while the real interest of the country requires, for example, doctors and engineers in excess of the existing supply. The charge that Government has produced a large *intelligentsia* which cannot find employment has much substance in it; it is one of the facts that lie at the root of recent political difficulties. But it is only of late years, and as part of the remarkable awakening of national self-consciousness, that the complaint has been heard that the system has failed to train Indians for practical work in manufactures, commerce, and the application of science to industrial life. The changing economic conditions of the country have brought this lesson home. But it must be remembered that many of the particular classes which eagerly sought higher education demanded also that it should be of a literary character, and were averse from, if not disdainful of, anything that savoured of manual

toil ; and also that when the universities of India were founded the idea of scientific and technological instruction had not dawned upon universities in England.

Lack of moral training.

398. The failure of the Indian educational system to train the character has often been criticized, and with justice. In their desire, while imparting actual instruction, not to force the mind of India into an alien mould or to interfere with religious convictions, the Government have undoubtedly made education too purely a matter of the intellect, and, at any rate in the beginning, they failed to foresee how substantially the mental training, that schools and colleges afforded, must come in time to modify the pupils' conceptions of life. Attempts towards direct moral training were always impeded by the desirability of avoiding the difficult and delicate domain of religious belief. But one of the most pressing needs of India is to foster more widely in the schools and colleges those ideas of duty and discipline, of common responsibilities and civic obligation, on which a healthy political life depends. Much effort is already being made in this direction, and there are notable and welcome signs of the growth among educated Indians of the conviction that the possession of education does not merely offer the individual opportunities of advancement. but should confer on him also the ability and the obligation to serve his country.

Backwardness of female education.

399. As regards the limited diffusion of education the conservative prejudices of the country must also be taken into account. It is not very long since the advocates of the higher education of women in Europe were regarded as unpractical and subversive theorists ; and in India social customs have greatly multiplied the difficulties in the way of female education. Upon this question opinion is slowly, but surely, changing, and educated young men of the middle classes are beginning to look for literate wives. But so long as education is practically confined to one sex the social complexion of the country must react upon and retard political progress.

Indigenous educational systems in the Punjab.

400. Prior to the constitution of the Punjab in 1849, Government schools existed in the districts of the Delhi territory which then formed part of the old North-Western Provinces,

and in the rest of the Province indigenous schools afforded a foundation for the present educational system. Under the Sikhs, teaching as a profession was almost entirely in the hands of the Muhammadans, who, besides teaching the Koran in the mosques, gave instruction in the Persian classics. On these schools were grafted the earliest Government vernacular schools. Purely Hindu schools were rare, being either colleges in which Brahman boys learnt Sanskrit and received a half-religious, half-professional training, or elementary schools where sons of Hindu shopkeepers were taught to keep accounts and read and write the traders' scripts. The few Gurmukhi schools that existed were of a purely religious character. The best feature of the indigenous schools was that they were not confined to the religious and mercantile classes, but were open to the few agriculturists who cared to attend them. After annexation the Christian missions established several schools, one at Lahore as early as 1849. Government soon followed their example and founded schools in the cities and larger towns, while District Officers founded and maintained schools at minor places out of local funds.

Annexation: Organisation of the Education Department.

401. In 1854 the Educational Department was first organised. It was administered by a Director of Public Instruction, with 2 Inspectors, 10 Deputy, and 60 Sub-deputy-inspectors. The schools directly supported by Government numbered 108 (4 district, 100 *tahsil*, and 4 normal schools). The department cost about Rs. 2 lakhs per annum, and in addition a cess of 1 per cent. on the land revenue provided for the maintenance of numerous village schools. The Persian script, already in use throughout the Western Punjab, and in two-thirds of the indigenous schools of the eastern districts, was unhesitatingly adopted as the standard; but the choice of a language offered greater difficulties. Punjabi is not a literary language; and Urdu, though unpopular, was so generally in use, especially in the law courts, that it was perforce adopted. Gurmukhi and Hindi schools were, however, to be encouraged wherever the people desired them.

Growth of the Education Department.

402. Difficulties in administration soon arose. All the schools were under the direct control of the department, and District Officers were dissociated from their working. The lower

grades of officials were foreigners, imported from Hindustan and without influence over the people. To obviate these difficulties, in 1860, all the vernacular schools were entrusted to the Deputy Commissioners and *Tahsildars*, the unpopular inspecting agency being abolished. But this measure failed to provide for the professional supervision of the schools, and it was soon found necessary to appoint an inspector in each district as the Deputy Commissioner's executive agent and adviser in their management. In the same year provision was made for the levy of school fees. Superior Anglo-Vernacular *zila* (district) schools were also established, and the personnel and curriculum in all schools improved. In 1864 Government Colleges were established at Lahore and Delhi, and in 1865 a scheme for an Oriental University was formulated. In 1868—70 the status of village schoolmaster was improved, the minimum salary being fixed at Rs. 10 a month; but funds ran short, and, as the immediate result of this measure, a number of schools were closed. The decentralization of finance in 1871, however, enabled the Local Government to devote more adequate funds to education, and the village schools rose rapidly in numbers and efficiency.

The Education Commission of 1882.

403. The Education Commission of 1882 marked a new era in the history of education in India. The whole educational system then prevailing was carefully considered in all its bearings; detailed recommendations of a practical character were made under every head; and these recommendations not only formed the basis of a new departure in matters of public instruction, but supplied lines for guidance in all parts of the educational movement. The chief recommendations concerned the recognition and encouragement of Indigenous Schools, so far as these could be made to serve any purpose of secular education; of increased efforts in favour of the extension of Primary Education; the rendering of Secondary Education less stereotyped, as well as more practical, than it had hitherto been; the revision of the system of scholarships so as to make them open to all students without restriction; the raising of the tuition fees gradually and cautiously; the moral training and physical development of the students; the encouragement of Female Education; an increased inspecting agency; and the holding of conferences for the discussion of questions affecting education. The recommendations were

generally adopted in the Punjab, and they resulted in an all but complete reorganisation of the Educational Department and of the educational machinery of the Province.

Education before the Reforms.

404. Since then the tendency to re-examine the basic postulates underlying the whole structure of education which manifested itself in England during the great war has had its reflex in India. Self-questioning has been also stimulated by the Reforms. Much had however been accomplished before the New Order began. By the formulation in 1918 of a five years' programme for the advancement of vernacular education in rural areas, the Punjab struck a new line. For the first time an attempt was made on a scientific basis to remove illiteracy and to equate the balance between rich and poor, between progressive and backward tracts. A vital factor in any educational system is the well-being and competence of the teachers. There had been little incentive for men of the right sort to enter the teaching profession. Teachers were seriously handicapped by small remuneration and less repute, with the result that with honourable exceptions, the profession was unpopular among men of high capacity. Shortly before the inception of the Reforms, however, the salaries of the educational services were revised. Careful provision was also made for the training of teachers, with the happy result that rapid expansion of education need not now be retarded by a lack of trained teachers. It is a matter for congratulation that, during the political strain of 1921-22, the teachers shewed a professional pride in their calling which saved the educational system of the Province from the disastrous consequences which took place elsewhere. Provision was also made for training in agriculture, for manual and clerical training, and for drawing and greater attention was paid to the claims of science. The appointment of Medical Inspectors and the revision of the course in physical training also indicate that the health and well-being of the pupils were not neglected.

Education under the Reforms.

405. The Reforms Scheme came into effect at the beginning of 1921. Diarchical principles have inevitably resulted in some division of control. While Education generally is a transferred subject, and under the control of the Minister for Education, responsible to the Legislative Council, European education is reserved and controlled by the Finance

Member. The teaching of Agriculture in Middle Schools is regulated by the Education Department, but the Agricultural College, Lyallpur, is controlled by the Minister for Agriculture. Overlapping of this kind is however incidental to any system of Government. Much secretarial work is saved by the fact that the Director of Public Instruction, in his capacity of Under-Secretary, deals directly with the Minister, except in such cases as are submitted to him through the Finance Department. By this means a considerable saving has been effected, which is also calculated to bring about that intimate and harmonious contact between the Minister and the Head of the Department, which is essential to the proper working of the Reforms.

Education and Non-co-operation

406. With the Reforms came the Non-co-operation movement and the attempted boycott of State-aided education. But the direct results in the Punjab were slight. For a time towards the end of 1920, and in the early months of 1921, the situation seemed serious. A few institutions cut all connection with the Government and University system. Some of the abler and better students left college. But the tide soon turned. The number of teachers who threw up their posts was negligible. Colleges and schools quickly reopened with little diminution of their numbers. But though discipline and work undoubtedly suffered, much good resulted. The loyalty of teachers was stimulated by a professional pride in their calling and a noble desire to serve the best interests of the boys and girls of the Province. The influence of parental authority was realised. Heads of schools and colleges made a practice of appealing to parents when disaster threatened, and the appeal was rarely made in vain. It was then realised how parents in backward districts shrink from sending their sons far away from home and parental influence to the unhealthy congestion of Lahore. The demand for "a national system of education" was not purely factitious. Much of the education was ill-suited to the practical needs of the students. In economics, for example, they desired to study the application of general principles to the problems of their own country instead of to those of distant lands. While therefore the constructive programme of the Non-co-operators has come to naught, their criticisms have provided a useful guide to weak points in the Educational system.

Numerical progress.

407. Of the progress made in recent years some idea may be obtained from the following statistics :—

Number of Scholars (thousands).

	1911-12.	1916-17.	1917-18.	1918-19.	1919-20.	1920-21.	1921-22.
PUBLIC INSTITUTIONS.							
MALES.							
Arts and Professional Colleges.	3	5	6	6	6	6	6
High Schools ...	48	54	55	59	65	72	76
Middle Schools ...	46	57	57	57	1,00	1,18	1,33
Primary Schools ...	1,80	2,46	2,43	3,47	2,28	2,39	2,70
Special Schools ...	3	4	4	5	4	4	5
Total ...	2,80	3,66	3,65	3,74	4,03	4,39	4,90
FEMALES.							
High Schools ...	2	3	3	3	3	3	3
Middle Schools ...	5	9	9	11	10	12	11
Primary Schools ...	29	42	42	43	46	47	48
Special Schools ...	1	1	1	1	1	1	1
Total ...	37	55	55	58	66	63	63
PRIVATE INSTITUTIONS.							
Males	48	42	37	34	42	43	50
Females ...	17	14	12	12	12	13	24
Total ...	70	56	49	46	54	56	74
GRAND TOTAL ...	3,81	4,77	4,69	4,77	5,18	5,57	6,27

Generally the figures indicate steady and substantial progress. The figures for 1911-12 shew the disproportionate attention that was then paid to the higher forms to the neglect of elementary education. The apparent fall in the number of those attending primary education in 1919-20 concurrently with a large expansion in the corresponding number of middle schools is explained by the raising of many

Upper Primary Schools to the Middle status at the time. Recent figures indicate the relatively greater attention that is now paid to elementary education. The recent rise in the figures for private institutions is more noteworthy than satisfactory as the type of education provided there is not always of the best.

Expenditure.

408. The figures for expenditure are also interesting as they illustrate the same points from another aspect.

Expenditure (lakhs of rupees).

	1911-12.	1916-17.	1917-18.	1918-19.	1919-20	1920-21.	1921-22.
PUBLIC INSTITUTIONS.							
MALES.							
Arts and Professional Colleges.	8	11	11	12	13	16	13
High Schools ...	13	20	21	23	26	32	36
Middle Schools ...	5	10	10	11	16	22	26
Primary Schools ...	9	16	17	19	20	24	27
Special Schools ...	2	4	4	4	5	6	8
Total ...	37	60	64	69	81	1,00	1,15
FEMALES.							
High Schools ...	1	2	3	3	3	3	3
Middle Schools ...	1	2	2	3	3	4	4
Primary Schools ...	2	4	4	4	5	6	7
Special Schools ...	2	1	1	1	2	2	2
Total ...	6	9	11	11	13	14	16
Total direct expenditure.	43	69	75	80	94	1,14	1,31
Scholarships ...	2	3	4	4	4	5	6
Other charges ...	24	36	36	40	44	65	53
Total direct and indirect expenditure.	69	1,09	1,15	1,24	1,42	1,84	1,90

409. An effect of the Reforms and of the financial stringency has been the devotion of greater attention to the important problem of educational finance. The financial stringency of to-day is ill-suited to the general desire for the expansion and improvement of education. A careful scrutiny of educational expenditure is therefore imperative. In the matter of educational finance, a distinction should be drawn, in the first instance, between retrenchment and economy. Retrenchment means an abandonment of what exists, or a refusal to expand it. Economy means the placing of the existing system on an economical basis. The economical organisation of the Department has already been dealt with. Attention has also been devoted to the elimination of primary schools which are attended by small numbers of pupils, and the urgency of expedition and economy in the construction of school buildings. In some cases the villagers themselves have shewn a tangible appreciation of the value of education by contributions either in money or in kind towards the construction of school buildings.

Need for economy.

410. Allied with this subject is the unfortunate congestion of intermediate students in an expensive city such as Lahore. It has already been pointed out (*para.* 406) that this practice is conducive neither to the maintenance of parental authority nor to the suitable training of these boys for life. The practice is also extravagant. The money already spent on the provision of collegiate and hostel accommodation for *mufassal* intermediates in Lahore would have provided the *mufassal* with good intermediate colleges or even better still, with cheap but suitable primary school buildings. And, what is perhaps even more unfortunate, sites in the proximity of the University are being used for these purposes which will be essential before long to the promotion of higher studies.

Congestion in Lahore.

411. One of the great educational problems, therefore, is the adaptation of educational policy to financial stringency. It may be claimed that much has been done already, but much remains to be done. The University and secondary systems should be reviewed; greater economy in buildings is required; a larger measure of decentralisation is indicated; and, while preserving the independence of local bodies, a more effective control over their expenditure is needed.

Possibilities of economy in Educational expenditure.

412. Prior to 1870 the Calcutta University had dominated the higher secondary education of the Punjab. The proposal to establish a University at Lahore was recommended by the Punjab Government in 1868. The Governor-General in Council was at that time unable to sanction the scheme. He was willing, however, to allow a grant-in-aid equivalent to the annual income of Rs. 21,000 expected from private sources on condition that, instead of expending the funds in establishing a University or examining body, they should be applied to the extension and improvement of the existing Lahore Government College on the principles advocated by the Punjab Government. The decision of the Government of India failed to satisfy the promoters of the Punjab University, and after further correspondence a compromise was accepted by them as a step towards the fulfilment of their design. The new institution, which was styled " The Punjab University College," was inaugurated by Sir Donald McLeod as President in January 1870. A governing body, called the " Senate," was appointed, and statutes were framed in which the special objects of the University College were declared to be—(1) to promote the diffusion of European science, as far as possible, through the medium of the Vernacular languages of the Punjab, and the improvement and extension of Vernacular literature generally ; (2) to afford encouragement to the enlightened study of Eastern classical languages and literature ; (3) to associate the learned and influential classes with Government in the promotion and supervision of popular eduaction. To carry out this policy the University College established an Oriental School and College at Lahore ; endowed lectureships, literary fellowships, and scholarships ; and held public examinations in the various subjects of study which it was desired to encourage.

Collegiate Education : The Punjab University.

413. The question was revived in 1878 in connection with a movement made on the occasion of the Imperial Assemblage at Delhi on 1st January 1877. The Secretary of State, on being satisfied that the examinations of the Punjab University College were of such a nature as to justify that body being entrusted with the power to grant degrees, accorded his permission to the introduction of an Act for the incorporation of a University in 1880. An Act for this pur-

Incorporation of the University.

pose was accordingly passed in 1882 as Act XVII of that year, and on 14th October the Punjab University was incorporated and received the power of conferring degrees for Oriental Learning and Arts. The Viceroy consented to become the Patron of the institution, the Lieutenant-Governor was appointed *ex-officio* Chancellor, and the members of Senate were designated Fellows. Authority was granted by the Act to the Governor-General in Council to empower the University to confer degrees in Law, Medicine, Science and Engineering also when it proved to his satisfaction that the arrangements and examinations of the University were such as to render the conferring of these powers desirable. In accordance with this authority, the power to confer degrees in Medicine was conceded in 1886, and degrees in Law and Science in 1891.

Indian Universities Act.

414. In common with other provinces of the Empire, the system of University education in the Punjab was profoundly affected by the labours of the Universities Commission, which visited Lahore in April 1902. The Indian Universities Act of 1904 which came into effect in October of that year carried the recommendations of the Commission into effect. The Senate was strengthened by the infusion of new material, and the reduction of the number of *ex-officio* Fellows and the exclusion of 37 other Fellows affected mainly those who had taken no part in University affairs for several years. The new Senate upon its incorporation constituted provisional Oriental, Arts, Science, Medical and Law Faculties, pending the regular appointment of the Syndics. The Engineering Faculty was abolished, the subject being treated as a branch of Science. The Faculties have the privilege of adding to their numbers graduates in the Faculties and specialists. The Syndicate, after reconstitution, was smaller by four than before the changes. Its work considerably increased, mainly in connection with affiliated colleges. Eighteen Boards of Studies, representing different subjects or groups of subjects, were formed to determine objections raised to questions set in examinations, previously the duty of the Syndics in each Faculty, to suggest examiners to the Syndicate, to recommend courses of study and reading and to act generally as consultative bodies to the Faculties. Of other subordinate Boards the Board of Accounts was left unaltered,

but the management of the Oriental College was taken over directly by the Syndicate and of the Law College by the Law Faculty.

Affiliation.

415. Before the passing of the Act no system of affiliation existed in the Punjab University, colleges being "recognized" only. Affiliation became necessary under the Act and all the colleges previously recognised applied. Committees of inspection were appointed to report on the condition of these institutions. They found it impossible to adopt any standard of efficiency that could be regarded as at all permanent without excluding the great majority of the institutions inspected. In the end a compromise was adopted. Affiliation was granted in every case, but the Syndicate required certain improvements to be effected as a condition of the continuance of affiliation.

Reorganisation of the University.

416. The revision of the regulations was a consequence of the new Act and was expeditiously carried out. Two new degrees—Bachelor of Teaching and Master of Science—were instituted, the latter a further step in the gradual creation of a highly specialised Science side of instruction. Degrees of Bachelor of Laws and of Medicine and Surgery replaced the Diplomas of Licentiate in these two subjects ; and the Oriental Examinations in Law and Medicine long in abeyance were removed from the regulations. Honours papers were instituted in the B.A. and B.Sc. Examinations, but special lectures were not at first required. Inter-collegiate rules affecting latest rates of admission to classes and transfer from one college to another had previously been adopted by the Syndicate as a condition of recognition and now became binding on every affiliated college. Every University student was now registered and his college career recorded. The registered number was used instead of the name in the list of candidates supplied to the Examiners. The reorganisation of the University was fitly marked by the provision in 1905 of a new University Hall with Syndicate and Committee rooms consonant with the dignity of the Foundation.

The Calcutta University Commission.

417. Just prior to the inauguration of the Reforms, an invaluable lead was given to the Education Departments in all provinces by the recommendations of the Calcutta University Commis-

sion. The Punjab made a start in this direction by the institution of Honours Schools which provided better and more varied teaching for the abler students. Another reform advocated was the removal from the University of all tuition of a strictly pre-University standard, and its concentration into new institutions to be known as Intermediate Colleges, which should provide the logical culmination of the system of secondary education. It had been felt for some time past that there was an excessive concentration of young students in Lahore, and that this was good neither for the place nor for the students (*para.* 406). Two Intermediate Colleges were accordingly opened by Government in Multan and Ludhiana, and two more were raised by private enterprise at Jullundur and Ambala. These with the Guru Nanak Khalsa College at Gujranwala, opened in 1917, made up a total of five Intermediate Colleges already in existence. On the whole, these colleges have made a good start and are proving their value ; but it seems unlikely that two-year Colleges will be entirely successful. Such a period is far too short for the traditions and influence of the institutions to be impressed upon the students. In such a college also it is difficult to combine efficiency and economy. The proposals of the Calcutta University to include the two High classes as well as the two Intermediate classes is the probable solution of the difficulty. The creation of four-year colleges at Lyallpur, Gujrat and Campbellpur is now under consideration.

Arts Colleges.

418. There are now 15 Arts Colleges, the Oriental, Government, Forman, D.A.-V., Islamia, Dyal Singh and Sanatan Dharm at Lahore, Khalsa at Amritsar, Murray at Sialkot, Gordon at Rawalpindi, D.A.-V. at Jullundur and Rawalpindi, Benarsi Das at Ambala and two Intermediate Government Colleges at Multan and Ludhiana. There is also one Arts College for females at Lahore which is maintained by Government.

University control and organisation.

419. The developments of the future are linked up with the questions of control and of organisation. Without these University teaching cannot be expected to flourish. At present, the University exercises an excessive control over the courses and curricula but an inadequate control over the teaching given in its name. The former is irritating to the teachers and an impediment to salutary changes and the formulation of well-devised courses ; and the latter can only result, as it

does, in wasteful duplication and yet in monotonous teaching, the students being confined to individual colleges. Without a suitable organisation to guide it, co-operation between the University and the Colleges and between the Colleges themselves is well nigh impossible. The Universities Act of 1902 tried to enforce official control; and subsequent proposals developed this tendency. Official control is not only vexatious but also ineffective. The obvious solution is for Government to relax its detailed control, and for the University while relaxing its control over the courses to tighten its control over the teaching.

Secondary Schools.

420. Secondary Schools are either Middle Schools or High Schools. A Middle School usually contains a Primary and Middle Department, the Primary Department consisting of the four classes of an ordinary Primary School, and the Middle Department of an extra course, extending over four classes, of which the first two are Lower Middle, and the third and fourth Upper Middle classes. A High School usually embraces a Primary, Middle and High Department, the first two corresponding to a Middle School, and the last having a course of two years, and terminating with the Matriculation School Leaving Certificate Examination. In many cases now however the Primary Departments of High Schools are being separated off as District Schools. The above system of classification is obligatory in Government and Board Schools, and has been generally adopted in Aided Schools. The subjects of study in the Middle Department include English in the case of Anglo-Vernacular Schools, and also a Vernacular Language, Arithmetic, Geometry, Algebra, History, Geography, Elementary Science, and either Persian, Arabic, or Sanskrit. The course of study for Vernacular Middle Schools terminates with the Vernacular Middle School examination, which is conducted by the Education Department. Scholarships tenable in the classes of the High Department are awarded on the results of the Vernacular Middle School Examination and a special scholarship examination for Anglo-Vernacular Schools. The course of instruction in High Departments embraces the subjects prescribed for Middle Schools, but carried to a higher stage and taught through the medium of English. The Matriculation School Leaving Certificate Examination serves two purposes ; it is at once a school

final examination and a test for admission to a University course. But the School Leaving Certificate Examination is merely a school final and ends the educational career of the student.

Unequal distribution of secondary schools: Concentration in urban areas.

421. The distribution of secondary schools has been engaging the attention of the department. It is to be feared that the comparatively wealthy urban areas have profited by the provision of facilities for advanced school education at the expense of the poorer rural tracts. Government itself has not been altogether blameless in this respect, for a Government high school is invariably to be found at the head-quarters of a district where there are not infrequently several other high schools, while other parts of the district may be left entirely without provision. It is not uncommon, also for private schools to be multiplied in urban areas in a spirit of competition. Such schools are often located a few yards from each other; sometimes even in contiguous buildings. In Lahore, for example, one portion of the city is thronged by high schools, while the remainder of that large city remains almost without provision. At Ambala there are some five schools within a stone's throw of each other. Simla is perhaps unique among the cities of the world for its difficult communications and its large area in proportion to its population, yet its two high schools and its anglo-vernacular middle school are next door to each other.

Local bodies and high school education.

422. Another difficult problem is to decide the responsibility of local bodies in the field of secondary education. It has been definitely laid down that the maintenance of anglo-vernacular middle schools is within the scope of local bodies; but the maintenance of high schools is, at any rate at present, beyond their scope. In consequence, Government has stated its willingness, provided that funds are available, to provincialise the high schools of local bodies; and eleven such schools were provincialised about 1921.

Attempts at remedy: The M. S. L. C. Examination.

423. Efforts, not always successful, have been made to correct the evils of cramming for examinations. In 1919, the University framed regulations substituting for the former matriculation examination a matriculation and school leaving certificate examination. The aim underly-

ing the change was to afford to those unable or unwilling to proceed to a university course the opportunity of securing a certificate of general education which would enable them to apply successfully, at the end of the school course, for employment in which such education is regarded as a suitable qualification. In this respect the innovation may be said to be achieving success, though in the arrangement of courses there is much room for improvement. The control of the examination is vested in the School Board.

The use of English as a medium of instruction of doubtful advisability.

424. The conflict between the vernacularist and the anglicist among educationists in India is as old as the thirties of last century, but it appears to be only now coming to a head. Never has the problem been more complex; never has its solution been more difficult. So far as the vernacularisation of the high school course in the matter of the medium of instruction is concerned, the Punjab holds that the teaching of English is not advanced (it may even be retarded) by a sloppy use of English as the medium in the middle classes, and that the use of the vernacular medium enables a boy to make greater progress in his ordinary studies than he could with the handicap of a foreign medium. This should allow him to save time which should be used in a methodical and scientific study of the English language.

Sports and tournaments.

425. Increasing attention is now paid to games for large numbers instead of spending sports funds on selected teams of specialists trained for tournaments. With a view to encouraging a spirit of healthy rivalry and emulation in games, district tournaments have been continued, but unfortunate collisions between rival institutions have been all too frequent. This has led at inspectors' conferences and elsewhere, to a vigorous discussion as to the utility of the tournament and its place in the educational system. Opinion remains divided.

The Boy-scout movement.

426. A notable addition has also been made to existing agencies for the moral training of the pupils by the inauguration of the Boy-scout movement. A camp was held in December 1921 for the instruction and training of scoutmasters. General enthusiasm prevailed and the scoutmasters are now engaged in training troops in the schools from which they were sent.

It is calculated that there are now about 6,000 boy-scouts in the Province. A large and successful rally took place on the occasion of the recent visit of His Royal Highness the Prince of Wales to Lahore and the success of that rally augurs well for the future development of the movement in the Province. It is realised that if the system is to maintain a high standard of efficiency, every care must be taken in the selection of scoutmasters and leaders and in the recruitment of scouts.

Agricultural training.

427. Public opinion is beginning to recognise that some training in agriculture is an essential concomitant of education in rural areas. In its method of agricultural training the Punjab takes the lead. The number of vernacular middle schools which provide a practical training in agriculture has reached nearly fifty and the reports on the efficiency and value of the teaching have been satisfactory. This experiment has aroused considerable interest in other parts of India. Other provinces have started a small number of separate agricultural schools but the general impression of the conference was that this type of school was most certainly very expensive and that as yet results have been disappointing. The Punjab system is very different. It is based on the principle that an intensive training in agriculture is unsuited to young boys, and that what is really needed is a good general training enriched, in suitable places, by some practical training in agriculture. This practical training is given on small school farms by a Senior Vernacular teacher who has undergone a year's course in agriculture at Lyallpur. The economy of the Punjab system at any rate is self-evident. Suitable training in agriculture is now given to some 5,000 boys. Intensive training in separate Agricultural Middle Schools of the type given in other provinces could be provided for only 500 boys at the same cost.

Primary Education: first beginnings.

428. It is however only by the improvement of primary education that the agriculturist can get a good general training. It is only recently that the importance of primary education has been recognised. The first step in primary education was an attempt to raise the indigenous schools of the Punjab to a higher level of efficiency. But

this scheme failed, and it was found necessary to convert the principal indigenous schools into Government schools, or branches of mission schools, or to bring them under the influence of district or municipal committees. The educational cess, however, realized so little that salaries sufficient to attract competent teachers could not be offered, although no attempt was made to provide a school for every group of villages. It was accordingly resolved to reduce a number of schools in order to raise the efficiency of the remainder. The result was that schools were accessible only to a small proportion of the boys of school-going age; and Sir Charles Aitchison recognized the necessity of improving the indigenous schools, without destroying their distinctive character, by the offer of liberal grants-in-aid on easy conditions. The system was accordingly reorganized the management of the schools being transferred to local bodies, which were, on their part, required to devote a fixed proportion of their income to primary education. Revised grant-in-aid rules provided for payment by results and staff grants to certified teachers employed in aided schools. The recommendations of the Education Commission of 1883 rendered it possible to give effect in greater detail and with greater precision to the policy inaugurated by Sir Charles Aitchison. Schools and scholars increased in numbers and efficiency, though the imposition in 1886 of higher fees on sons of non-agriculturists reduced the number of boys of that class in the lower primary department. By 1889-90 the number of aided schools had risen to 300, with 10,000 pupils; and they continued to progress until 1896-97, when the growing popularity of the Government schools, combined to some extent with the pressure of bad seasons, checked their advance. But the District Boards had so many pressing calls on their resources, that they could not meet the demand for primary education. Numerically, primary schools showed but a slow advance, but in efficiency their progress was marked. The abolition of the lower primary examination in 1898 enabled the course of instruction to be made continuous for fully five years, and permitted controlling officers to devote more time to questions of organisation and discipline, methods of instruction, and so on, at their inspection. In the upper primary department more time was allotted to object lessons and elementary science.

Zamindari Schools for agriculturists.

429. In 1886 the necessity of a simpler and more practical curriculum for sons of agriculturists led to the establishment of *zamindari* schools. In these half-time attendance only was required, and they were closed during each harvest. Elementary reading and writing, in the character chosen by the people, and arithmetic by native methods, were taught. Qualified teachers in these schools received extra pay, and arrangements were also made to train teachers in those subjects in the normal schools. From 1886 to 1892 the schools prospered ; but the people then began to realise that they led to nothing, as they did not fit boys for Government employ, and ever since they lost ground. In 1901 *zamindari* schools numbered only 187, with 4,000 pupils. In view of their increasing unpopularity, steps were taken in 1904 to open village schools with a simpler course of studies, planned with special reference to the requirements of agriculturists.

The five-year programme for Vernacular Education.

430. But it was only with the inauguration (in April 1918) of Sir Michael O'Dwyer's five-year programme for the expansion and improvement of Vernacular Education in rural areas that the education of agriculturists was seriously undertaken. The primary object of the new policy was an increased provision of schools. The development of vernacular education was thus arranged so that schools would be established at every centre where an average attendance of fifty pupils might be expected, provided that a distance of two miles ordinarily intervened between two schools. It was expected at that time the goal would be reached wihin a period of fifteen years. A necessary preliminary was the planning of maps for each district, with lists of villages and the population of each. As each map was completed, a definite programme of expansion was drawn up and submitted to Government for approval. The additional number of board schools anticipated at the end of the quinquennium was to be realised both by the creation of new board schools and by the conversion of private into board schools.

Method of awarding grants.

431. The second (and equally important) object of the new policy was an improved and a more equitable method of Government assistance. The original system in the Punjab had been to pro-

portion grants to expenditure on salaries; in other words, to subsidise those boards which were both willing and able to spend money on education. The backward areas thus became even more backward until they were assisted (or embarrassed) by ill-timed and spasmodic doles. The five-year programme, however, was based on different principles, its main objects being to make arrangements for a continuous advance in education and also to provide as equitably as possible for rich and poor alike. Each district was therefore graded in such a way that local bodies would be encouraged to contribute continuously a fair proportion of the cost of expansion and improvement without committing themselves to more than they could afford; without, that is to say, starving other services for the sake of education. Thus, a board graded at 50 per cent. would expect to receive Rs. 5,000 of every Rs. 10,000 of additional expenditure; a board graded at 75 per cent. would receive Rs. 7,500; and so forth. The following factors were therefore taken into consideration: the sources of income of each board and the extent to which it was using those resources; the percentage of its net income spent on education; the amount of the local cess; the annual surplus (if any); the estimated cost of carrying out the scheme; the anticipated increase or decrease in the annual income. An important feature of the scheme was its elasticity. In a lean year, Government can cry a halt and call for a general retardation of activity all round by extending the programme to (say) seven years; and *vice versa*.

Encouragement of backward areas.

432. It is undoubted that the programme achieved a very large measure of success in its two main objects: an increased provision of schools and a more equitable method of awarding Government grants. The programme was even more successful in its second object, the encouragement of the backward districts. Marked progress was made in all the districts of the Rawalpindi division; and to a less degree in the Multan division. The influence of Indian soldiers who took part in the war was on the side of educational advance. It is significant that the Rawalpindi and Jhelum districts and the central districts of the Jullundur division all made most noteworthy progress; and it is possible that the advance made in the Rohtak district was inspired from the same source.

433. It is but natural that in such an ambitious scheme certain defects should be revealed. In the first place, the fulfilment of the programme was not attended by that continuity of effort which its originators had set out to achieve. The total of the achievement was satisfactory, but the figures which make up that total were far from satisfactory. The Rohtak and Multan boards nearly completed in four years a programme which was intended to occupy fifteen years. Some ten boards completed their programmes at the end of the fourth year. Some, however, lagged behind in the race. This disparity in the rate of progress was due to many causes, but the personal factor was the most potent. In the first place, there was not the guiding hand at headquarters, with the necessary experience and the necessary leisure, to supervise the work: to curb the impetuous, to encourage the faint-hearted and the weary, to spur on the apathetic.

Unfortunate differences in the rate of progress.

434. Another unfortunate deviation from the scheme was the neglect of the proviso that schools should ordinarily be started only in places where an attendance of at least fifty pupils was expected. In consequence, a very large proportion of the primary schools were manned by a single teacher apiece, who was expected to cope with all four classes. The number of schools with an attendance below twenty and even of single figures was unexpectedly large. Thus it may be contended that the programme was concerned with the provision of schools rather than of scholars.

An excessive number of uneconomically small schools.

435. Primary schools now afford a course of instruction entailing over four years, the V class being now included in the Middle Department which has, therefore, four classes instead of three as formerly. The distinction between Upper and Lower Primary Classes has been abolished. English is also now begun in the V class in the middle department instead of the IV as was the case before. All these changes were made after the initiation of the five-year programme. A new type of school called the Lower Middle School, having six classes, was also introduced to compensate for the reduction of a class in the primary school, the intention being to have one Lower Middle School in the centre of every small group of primary schools. In the rural areas where

Introduction of the four-class primary school.

there was a real demand for English Education, Vernacular Middle Schools were allowed to attach optional English classes of the same standard as in Anglo-Vernacular Schools for the benefit of those boys who wished to study English and were prepared to pay the enhanced fees prescribed for Anglo-Vernacular Schools.

Objects of the change.

436. The main objects of this step were to meet the requirements of the Compulsory Education Act, to relieve teachers in single-teacher schools from the impossible burden of teaching five classes, to eliminate the three-class school and also to equate the opportunities of urban and rural boys, the study of English being started in the fifth class. Under the old system rural boys, after passing the fifth class of a primary school, had to attend a special English class on entering any Anglo-Vernacular School and were thus handicapped by the loss of a year. There are many critics of the new system, chiefly on the score of expense, as a new type of school, the Lower Middle School, has been necessitated. The parents also complain that their children learn but little in a primary school and that they soon relapse into illiteracy after leaving school. There is much force in both these contentions; but it should be borne in mind that the defects of the new system have been accentuated during the awkward time of transition when the one-teacher school is dominant. There can be little doubt that the primary school of the future should embrace six classes and that the teaching of English should be postponed until a later stage.

Necessity for economy.

437. Unfortunately the idea prevailed among District Boards that Government was committed to an indefinite liability of contributing its quota towards any additional expenditure by a board, however great it might be. This proved an obstacle to the harmonious working of the scheme. Some of the boards indulged in extravagance which was due to a desire to progress too quickly and therefore extravagantly. Shortage of funds, however, very quickly emphasised the stern dictates of economy ; and the pruning knife was used with effect.

Compulsory education.

438. The second great achievement of recent years in primary education was the passing of the Compulsory Education Act of 1919. The Act applies only to boys, and to them

only for a period of four years. Compulsion has already been introduced in the cities of Multan and Lahore, though a number of other municipalities and some district boards are contemplating the application of the Act. At Multan, over 54 per cent. of the boys of compulsion age are at school as against 27 per cent. before the application of the Act. At Lahore, the proportion has risen from 50 to over 62 per cent. At neither place have legal proceedings been taken against offenders.

Difficulties in the introduction of compulsory education.

439. But the introduction of Compulsory Education is attended by difficulties. It is not "merely a question of money." The compulsory system is not only more efficient but also more economical than the present voluntary system. A school of (say) 160 pupils with a teacher for each class is obviously more efficient as well as more economical than a school of (say) 30 pupils with a single teacher taking all four classes. The difficulties to be overcome in the introduction of compulsion on a wide scale are other than the provision of funds. In the first place, there is the poverty of the people. It is easy to state that education would improve their material well-being and would assist them in avoiding the clutches of the money-lender, but it is far more difficult to convince people who are daily faced by the problems of poverty and who need the labour of their sons. It is easy to state that a school should be open to all and that the sons of the depressed classes should receive admission, but it is far more difficult to ensure that this excellent principle is carried into practice. Another difficulty has received insufficient attention, and that is inadequate supply of teachers. In all western countries where compulsion has been successfully introduced, more than three-fourths of the teachers in primary schools are women. Without the women compulsion would no longer be possible, not only because the supply of teachers would be inadequate, but also because the expense would be prohibitive. In India, social conditions being what they are, not only are women teachers debarred from the primary schools for boys, but men teachers are sometimes engaged in girls' schools. Separate schools are also required for boys and for girls. There is yet another difficulty. The Indian university and secondary school systems suck from the countryside its best intellect, but the social conditions of the

country discourage such intellect from returning to the villages and thus from influencing the villagers in the direction of education. The religious organisations of the Indian communities do not offer to graduates the same opportunities of work and influence as fall to a clergyman in England or to a minister in Scotland. There is not, again, the same scope for an Indian medical graduate in the villages as is afforded to a medical practitioner in the English countryside. The Indian landowner does not ordinarily proceed to a university. What primary education in England would have done without the influence of the parson, squire and doctor is difficult to imagine; yet in India these influences are rarely available to rural education. Again, in England, the primary school enjoys the honorary services of an army of philanthropic ladies who visit the parents, care for the needs of the children, and carry out a hundred and one little duties, the performance of which enables the school to be appreciated as something of real value by the people.

Text-Book Committee.

440. Much is being done to enlarge the literary resources of those who only know the vernacular. The Text-Book Committee is charged with the task of supplying suitable text-books to the schools, a work of the utmost importance and no little difficulty. In 1905-06 a Text-Book Revision Committee was also appointed with a grant of Rs. 20,000 to bring up to date revision work which had fallen into arrears. The Committee now consists of 25 members, each nominated for a period of two years, representing different interests, with the Director of Public Instruction as *ex-officio* President. The membership of the Committee is composed of eight Europeans, six Hindus, eight Muhammndans and three Sikhs. The Committee represents not only different communities and religions but also the many types of educational institutions which exist in the Province: primary and secondary, vernacuclar and anglo-vernacular schools; girls' schools, industrial, technical and art schools; training institutions; Government and aided schools and schools under private or sectarian management. A branch has been in existence at Delhi since 1902, and valuable assistance is rendered by the Delhi scholars, who are particularly well qualified to deal with literary production in Urdu. The memorandum

of Association enumerates the objects of the Committee as follows:—(*a*) the recommendation of suitable text-books in all subjects for schools; (*b*) preparation, translation and publication of text-books; (*c*) the maintenance of lists of books for the libraries of schools; (*d*) the encouragement of the development of vernacular literature; and (*e*) the maintenance of a library and museum of reference. During the last ten years a sum of nearly Rs. 1 lakh was expended on books and periodicals for presentation to educational institutions of all kinds.

Possible developments.

441. The standardisation of technical terms in Urdu and Punjabi recently undertaken may mark the beginning of an era, when the results of modern science will no longer remain a sealed book to those who only knew the vernacular. An edition of the Home University Library in Urdu or Punjabi would bring the literate agriculturist in direct contact with all that is best in modern thought. At present he can only see scientific truth as distorted by the passion of political controversy. The corollary to self-government is the education of the masses; and true education is only attainable when they are in a position to think and decide for themselves, and not through the mentalities of politicians. This they will only be able to do when they have access to the best literature of the world translated into their own tongue.

Training institutions: The Lahore Central Training College.

442. But education depends upon the teacher; and it is only by means of well-trained teachers that a good education can be given to the pupils. Normal Schools were originally founded to train teachers for the middle and primary schools, but they were restricted to training for primary schools alone after the organisation of the Lahore Central Training College. This institution was opened in 1881, the first of its kind in India. Since its foundation most of the secondary schools have been supplied with trained teachers, and at one time the Punjab was able to spare a number of trained and experienced men to assist in revising and improvnig the training school system in the United Provinces. There were at first two classes: the senior English, which prepared teachers for higher work in English secondary schools; and the senior vernacular, which trained men for all kinds of purely vernacular teaching in

secondary schools. In 1883-84 a junior English class was opened to train teachers for the primary classes of anglo-vernacular schools. With the extension of university education, the preliminary educational qualifications were raised ; and after 1896 only B.A.s or those who had read up to that standard in a recognized college, were admitted to the senior English class. For admission to the junior English class men must have either passed the intermediate examination or attended the classes of a college for two years. In 1904 this institution was completely reorganised. The staff was strengthened, the period of study was raised to two years, a clerical and commercial class added, and the number of available stipends much increased. A teacher's degree examination was also instituted, open to all graduates in Arts who had attended the Central Training College for another year after passing the senior anglo-vernacular certificate examination.

The Lahore Central Training College in 1917.

443. In 1917 the classes in the Lahore Central Training College comprised the University degree (B. T.) class; the senior and junior anglo-vernacular classes; and the senior vernacular class. These were accommodated in the main buildings of the college. In a subsidiary building on the college premises, but also under the control of the Principal, there was a normal school with eighty junior vernacular students. Thus, the total number of students under training and practising in a single model school was over 300; and the institution was, therefore, not only crowded as to accommodation but also overloaded with work and responsibility, cramped in scope and opportunity, and hybrid in character. Apart, however, from this very large and overburdened college, provision for training was scanty. A policy of decentralisation and of expansion therefore became essential.

Decentralisation.

444. In 1918, the normal school in Lahore was removed and expanded into two institutions which were located at Gujranwala and Sialkot (the former has since been transferred to a commodious and permanent home at Ghakkar). In the following year, the senior vernacular class was also closed, the work being conducted in an institution dignified by the name of a senior vernacular college at Lyallpur, a second

college of the same type being opened later at Hoshiarpur. These changes had the effect of relieving the Central Training College of the purely vernacular work and of leaving it free to concentrate on anglo-vernacular training. The retention of the junior anglo-vernacular class, however, rendered it still difficult to expand and to improve the senior classes of the college. It was therefore intended to close the junior class and to establish a junior anglo-vernacular college at Jullundur. For various reasons this project was postponed from year to year; and, finally, other and probably more satisfactory means of providing for the junior anglo-vernacular students led to the abandonment of the proposal. The potentialities of the intermediate college and the opportunities it offers for professional training were brought to public notice by the Calcutta University Commission. Economy, a wider atmosphere for the students, and a larger measure of general training are expected from the association of students under training with these colleges. The Punjab Government has recently decided to investigate possibilities along these lines by associating junior anglo-vernacular classes with the intermediate college at Multan. The development of vernacular training has been even more marked. This development has been achieved not only by the addition of new normal schools but also by the expansion of existing schools. It has thus been possible to dispense with the doubtful experiment of the training class without in any way prejudicing the supply of trained teachers.

Introduction of Technical Education.

445. The admitted defects of the purely literary teaching which dominated Indian education from the start led to an attempt to introduce technical education. Prior to 1886 the Medical and Veterinary Colleges, the Law School, the Engineering Class of the Punjab University, and the Mayo School of Industrial Art were the only real technical institutions in the Province, the few so-called industrial schools being mere workshops in which inferior articles were made at a high cost. In the three following years, however, some progress was made, the chief step being the establishment of the Railway Technical School at Lahore to provide instruction for the children of the railway workshop employés.

Control and inspection of industrial education under the Reforms

446. With the introduction of the Reforms Scheme the control of industrial education was transferred to the Department of Industries. Primary industrial schools however still continued to be administered by the Department of Education. Thus, the middle schools were inspected by the Principal of the Mayo School of Arts and by an assistant inspector; and the primary schools by the Inspector of Drawing and Manual Training and his assistant. This very complex system had most unfortunate results. There must be much extravagance in a dual inspecting system of this nature. There must also be a confusion of policy ; and, the inspecting agency in both cases being that of central officers with other duties to perform, there must be a serious lack of contact between the inspectors and the local bodies to whom the real control usually lies.

Female education.

447. Mention has already been made (*para.* 399) of the difficulties attending on the introduction of female education in India. Encouraged by results in the United Provinces, several girls' schools were opened in the Punjab as early as 1855, and in 1862 Sir Robert Montgomery held a great darbar at Lahore in order to enlist the co-operation of the chiefs and notables of the Province. Under this impulse nearly 1,000 schools with 20,000 girls had been opened by 1866, but the results were unsubstantial and the attendance soon fell off. A sound system of female education was only established in 1885-86, in which year an attempt was made to render the existing schools places of healthy elementary education, adapted to the simple requirements of the people, and rewards for diligent work were substituted for payments for mere attendance. An Inspectress of Schools was first appointed in 1889. Thenceforward progress was slow but sure, as is shewn by the statistics of scholars in the Punjab and Frontier Province.

Girl pupils in Punjab and Frontier Province.

(Thousands.)

1902.	1907.	1912.	1917.	1922.
14	23	35	53	61

Religious and technical training for girls.

448. The importance of religious training in the life of a girl has been rightly emphasised, especially in the primary stage. Local bodies have therefore been encouraged in the creation of denominational institutions. Considerable attention has also been paid to making the courses more suited to the needs of the girls and to their environment. The improvement in handwork is an illustration of this change. Several kinds of work are done by the pupils and are on sale in the Punjab. The Rawalpindi *phulkaris* embroidered in lovely colour schemes so that hardly a thread of the original fabric is discernible ; the Jullundur Pathan patterns outlined in black and filled in with colours ; the Multan white embroidery on muslin all testify to a training of the artistic faculties. In Muzaffargarh dainty baskets are made of palm leaves, in elaborate designs and quaint shapes. Indian embroideries in gold and silver are so beautiful that the revival of interest in indigenous work is most welcome.

Defective educational facilities for Europeans and Anglo-Indians.

449. Special difficulties have also attended the provision of education for Europeans and Anglo-Indians. In 1881 no less than 440 children of school-going age were then found to be receiving no education whatsoever. The absence of an enactment making attendance at school compulsory, the apathy of parents, and the migratory character of the European and Eurasian community were great obstacles to advancement. The schools, especially in the plains, laboured under many disadvantages, the lack of trained teachers being specially felt.

Policy of the Diocesan Board of Education : migration to the hills.

450. In 1921, the Diocesan Board of Education (*para.* 665) adopted the policy of transferring all but primary schools to the hills. In pursuance of this policy, the boys were sent from Lahore to the Lawrence School at Ghora Gali and the girls to St. Denys' School at Murree. The North-Western Railway has also proceeded on similar lines. Hitherto, there had been a certain number of small schools in remote places, generally maintained or assisted by the Railway authorities ; and these could neither be staffed nor maintained in such a way that this discipline and teaching would ordinarily be satisfactory. Many of these schools have been closed ; and the Railway has provided a

liberal system of scholarships by which its employees can send their children to schools in the hills. The free and healthy life in the hills, association with a large and well-conducted school, and the benefit of better and more varied teaching should do much for the sons and daughters of the community.

Muhammadan education.

451. When in 1871 attention was first directed to the backwardness of education among Muhammadans in India, inquiry showed that in the Punjab the Musalman community had availed itself of the facilities offered as fully in proportion to its numbers as Hindus. Much had been done to foster the study of Arabic and Persian. Indeed, the latter had been favoured at the expense of vernacular languages and literatures, and it was felt that no special measures for the advancement of Muhammadan education were required. It was, however, found that Muhammadans seldom prosecuted their studies beyond the middle schools, and that few attended colleges. Muhammadan boys spent years in learning the Koran by rote in the mosques, and thus reached manhood before their education could be completed. The poverty of the Muhammadans as a community, and the fact that they were mostly agriculturists, also militated against their higher education. Progress was, however, made, and in 1883-84 the Muhammadan college students were thrice as numerous as in 1870-71. Nevertheless, their number in the secondary schools and colleges remained proportionately far below that of the Hindus, and the necessity of special measures was realized. In 1887 Jubilee scholarships (now called Victoria scholarships), tenable in high schools and colleges, were founded by Government ; and local bodies were authorized to establish them for middle schools. In addition, half the free or semi-free studentships in secondary schools and scholarships were reserved for Muhammadan boys. The community itself also began to realize the necessity for self-help, and various societies were started which organized anglo-vernacular Muhammadan schools in the cities and large towns. The result was a rapid advance in higher Muhammadan education. Muhammadans can now no longer be considered a specially backward class, except inasmuch as they are mainly agriculturists, and agriculturists' education is backward compared with that of the urban population.

Literary Societies.

452. Apart from efforts to educate the young, societies exist which aim at enlightening those whose education is technically complete. Literary societies, as the term is understood in the West, can hardly be said to exist in the Punjab. Machinery for the incorporation of such societies is provided by Act XXI of 1860, but most of the bodies which seek registration under the Act are not of a literary character. Numerous societies, both registered and unregistered, indeed have come into being, especially of recent years, the majority of which, however, are primarily religious and are meant for the advancement of the interests of particular communities which they profess to represent. Among such may be mentioned the various branches of the Arya Samaj and the Sanatan Dharm Sabha among Hindus, the Khalsa Diwan among Sikhs, and the many Muhammadan Anjumans. A few bodies are, however, established on a broader basis, and as they include individuals of all classes, and denominations, their usefulness is not cramped by any sectarian limitations. Debating societies of course are a feature of college life.

The Society for Promoting Scientific Knowledge.

453. Although not strictly speaking a literary society, the Society for Promoting Scientific Knowledge, Lahore, calls for notice. Established in 1900, the society has now branches at Delhi, Srinagar (Kashmir), Sialkot, Simla and Kaithal and numbers some 400 members. This non-sectarian and non-political body run by honorary workers is now registered under Act XXI of 1860, and has for its object the diffusion of useful and scientific knowledge. In particular special attention is devoted to spreading knowledge of elementary principles of sanitation and preventive medicine by means of lectures, lantern demonstrations and distribution of tracts on such subjects as Tuberculosis, Malaria, Cholera and Plague. More recently classes in Hygiene, Home Nursing and First Aid to the injured have been started for men and women. A monthly magazine in Urdu, the 'Raushni,' is published. An annual grant of Rs. 1,000 is received from the Local Government and contributions from Municipalities and District Boards.

The Punjab Historical Society.

454. The Punjab Historical Society was established in 1910 through the efforts of Dr. Vogel, Mr. J. P. Thompson, I.C.S. and Mr. Woolner, now Secretary. Papers are read

as opportunity offers and are subsequently published in the Society's Journal. Eight volumes of the Journal have been published and a new series has been started.

The Punjab Government Press.

455. Before the year 1882 a Press, known as the Punjab Civil Secretariat Press, executed work for the Civil Secretariat only. Typographic printing was then abolished in the Lahore Central Jail Press which, together with the Public Works Department Secretariat Press, was amalgamated with that of the Civil Secretariat. The establishment, at the time of amalgamation, consisted of about 250 employés. In 1884 however most of the printing previously executed by the Central Jail was given out on contract to Messrs. W. Ball and Co., and the "Civil and Military Gazette." The proprietors of the latter press are still Government Contractors for form printing. The Government Press at that period was established in buildings near the present Veterinary Hospital, but in 1915 it moved into its present more commodious premises. With the exception of a small electric motor for a single Monotype machine, installed just before the removal, all work was done by hand in the old Press. In the new building however electrically driven labour-saving machines for type-setting, printing and binding were installed. From an establishment of 250 employés in 1882 the number has now increased to 500 while the value of work turned out, exclusive of cost of printing paper and binding material, has increased from Rs. 1¼ lakhs in 1910 to Rs. over 2½ lakhs in 1921-22.

Borstal Institution Press.

456. In 1920 a small press was opened in the Borstal Institution for the purpose of teaching certain selected inmates the art of typographic printing and plain binding. Classes commenced with about 25 pupils; there are now between 70 and 80 at work in this department. The value of composing, printing and binding executed during the year 1921-22, exclusive of cost of paper and materials consumed, amounted to nearly Rs. 10,000. A number of trained inmates conditionally or finally released are being employed in the Punjab Government Press, and their work and general behaviour are satisfactory. Other inmates similarly trained are now employed with private printing firms. Want of accommodation is the most serious drawback to any enlargement of this scheme.

Lahore Central Jail Press.

457. The exact year in which lithographic printing was introduced in the Lahore Central Jail is not known, but in old records mention is made of this industry as far back as 1853. In 1867 only 9 or 10 men were so employed in the Central Jail; there are now about 300. Hand presses only were utilised for many years, but in 1892 lithographic machinery was installed and there are now about 20 machines in use—chiefly engaged on the printing of vernacular forms. The approximate value of work turned out during 1921-22, exclusive of the cost of materials consumed, was Rs. 1½ lakhs.

The Punjab Public Library.

458. The Punjab Public Library was established in 1886 with the object of providing a public library for the use of all classes of the community and a reading room open to the public free of charge. The library contributes to the intellectual advancement of the country by placing within the reach of students and scholars literary and scientific works which it would be impossible for them to acquire for themselves. The committee of management consists of 23 members; the Director of Public Instruction, the Directors of Industries and Agriculture, and the Deputy Commissioner, Lahore, are *ex-officio* members. Members are nominated by the Punjab University, the Lahore Municipal Committee, the Lahore Gymkhana, and the Bishop of Lahore, and two are elected by the life members from among their number. The remaining members are nominated by the Punjab Government, which also appoints the President (at present Sir Shadi Lal, M.A., B.C.L.). There are on the rolls 260 life members and life subscribers and 425 annual subscribers. In addition to receipts from these, the library receives a grant from Government and from some of the local bodies in the Province. A large number of books, both on general and technical subjects, have been collected, and in 1909 a well-equipped commercial and technical section was added. Arrangements have been made, since 1912, in accordance with the wishes of the Punjab Government, to keep in the premises of the Library specifications of Patents and Designs registered in India. They will be available to the public. The Punjab Government has during the past ten years made special grants amounting to twenty-five thousand rupees to the Library, and thus has enabled the Committee of the Library to

purchase a large number of books and bring the collection in the Library fairly up to date.

Growth of the Press.

459. One of the subtlest educational influences is that exercised by the press. Forty years ago, *i.e.*, in 1883, 23 papers sufficed for the needs of the Punjab. At the end of 1905, the number stood at 221, the preceding quinquennium witnessing a remarkable increase of journalistic activity. In 1909, the year preceding the introduction of the Press Act, the number of Punjab papers stood at 253. The passing of the Press Act caused only a temporary lull, and the newspapers and periodicals of all kinds published during 1914 numbered 272. This is the highest figure ever recorded. The repeal of the Press Act led to the birth of a large number of papers, but most of these speedily stopped publication. The Punjab now issues 236 periodical publications, of which 91 are owned by Hindus, 82 by Muhammadans and 32 by Sikhs. Lahore has always published the largest number of papers, Amritsar, Simla, Sialkot, Rawalpindi, Gurdaspur and Ludhiana being other centres of journalistic activity.

Attitude towards Government.

460. The attitude of the Muhammadan papers, during 1905 and 1906 with one or two exceptions, was distinctly loyal although all of them, particularly the *Vakil*, *Watan*, *Observer* and *Paisa Akhbar*, took the side of Turkey against England in connection with the Macedonian question and the Turco-Egyptian boundary dispute. On the other hand, the Hindu Press favoured a disloyal tone and not a few members of it lost no opportunity of vilifying Government and its doings. The partition of Bengal and consequent agitation called forth a good deal of objectionable writing, especially in the *Tribune* and the *Punjabee*, the latter being then the most dangerous publication in this Province. In 1917, the year of the agitation against the Colonisation Bill, the Hindu newspapers were conspicuous for the seditious and scurrilous tone of their writings, with reiterated accusations of oppression and tyranny against the British Government. The year witnessed the birth of *India* (Gujranwala) and *Bharat Mata* (Lahore), two openly anti-Government publications, and the conversion of the *Hindustan* into a rabidly seditious paper. Among other more objectionable Hindu newwspapers were the *Hitkari*, *Light* and the *Jhang Sial*. With a few exceptions, particularly the

Zamindar, the Muhammadan papers ignored the overtures made to them by their Hindu contemporaries to identify themselves with the agitation that prevailed during the year. The Sikh Press was still in a nebulous state, but its leading member, the *Khalsa Advocate*, was loyal to the core. During the next two years the general attitude of the press towards Government was one of less overt hostility than in 1907 and there was a perceptible dimunition of vehemence and irresponsibility in its tone. Revolutionary papers like the *Inqilab*, *Tilak*, *Sahaik*, *Bedari* and *Peshwa*, the last being owned and edited by a Muhammadan, were, however, started during this period. During 1910 the Press was not characterised by any unreasonable criticism of Government's policy and measures. This was to be attributed to a fear of the Press Act, the prosecution of several papers in the preceding year and the Hindu-Muhammadan controversy and other internal discussions which absorbed most of the militant energy of the press. This improvement in the relations between the press and Government continued during 1911, but in 1912 the Turkish wars against Italy and the Balkan allies created a tendency among the younger generation of Muhammadan journalists to discard the Muslim tradition of uncompromising loyalty. These wars and their results, coupled with the revocation of the partition of Bengal and the Cawnpore mosque affair, had the effect of prejudicing these journalists against the British Government. And the situation in 1913 was such that although the old, conservative Muhammadan papers remained level-headed and loyal, their voices were not easily heard above the clamour of irresponsible Muslim journals like the *Vakil* and the *Zamindar*, the latter of which published grossly seditious articles in 1912 and 1913. The tone of the Sikh Press also changed for the worse in 1913, with the raising of the Rikabganj Gurdwara question. The Hindu papers were better conducted during this year than their sister-organs. The outbreak of the Great War and the steps taken by the Government to secure the internal tranquillity of the country necessarily imposed a check on the license of the press in 1914. The extremists Hindu organs (such as the *Hindu*, the *Dipak* and the *Bijli*), however, published objectionable effusions from the pens of certain revolutionaries Several Sikh papers, notably the *Khalsa Akhbar* (of Harchand Singh of Lyallpur) and the *Sher-i-Punjab*,

both started in 1914, attacked Government in connection with the Budge Budge riots. A section of the Muhammadan Press found fault with Great Britain over the Balkan Settlement. Speaking generally, the press displayed a high sense of responsibility and increasing sobriety and restraint throughout 1915, the improvement being mainly due to a fear of the Press and Defence of India Acts and to the feeling that in a time of war Government would not tolerate provocative and inflammatory writings. The *Zamindar*, *Nirbal Sewak*, *Paigham-i-Sulah* and *Akhbar-i-Am*, however, repeatedly published alarmist and pro-enemy rumours.

Home Rule agitation: Increased bitterness of the Press.

461. During the following three years the Home Rule agitation and the Rowlatt Bills exercised an undesirable effect on the whole press, particularly on the English papers and their imitators. The *Tribune*, the *Punjabee* and the *Bulletin* grew steadily more bitter and uncompromising: they opposed Government's measures *en bloc* in a spirit of unreason, the first-named being the most insolent. Of the Muhammadan papers, some of which began to favour extreme politics, the *Vakil*, the *Observer* and the *Punjab* were the worst behaved. The Sikh press ventilated petty grievances and encouraged the feeling that Government was unmindful of the true interests of the Sikhs. The year 1919, which witnessed the seditious agitation against the Rowlatt legislation, marks the turning point. Since then newspaper writing in the Punjab has been drifting into seditious channels. The tone of the press was most intemperate and was characterised by violence for the greater part of that year, the *Tribune*, *Punjabee*, *Leader*, *Waqt*, and *Partab* among Hindu papers and the *Aftab*, *Siyasat*, *Punjab* and *Vakil* among their Muslim contemporaries being the most objectionable prints. As regards Sikh newspapers, the year 1919 marked the opening of a new chapter in their history an era of strong language, exaggerated demands and even the advocacy of unconstitutional methods. They showed a distinct tendency to take up an aggressive attitude throughout the year, the *New Herald* being the worst offender in this respect. 1920 was the year in which the non-cooperation movement was started over the so-called Khilafat and Punjab wrongs. During this year Press criticism of Government was more unsatisfactory than it had been on any previous occasion. With a very few exceptions, all

newspapers developed a tendency to strong writing and hostile criticism of Government measures. Sikh papers may be said to have been the worst-behaved section of the press during the year. The *Akali*, the most objectionable of these journals, and Lala Lajpat Rai's paper, the *Bande Mataram* came into existence in 1920. Since the inauguration of the non-cooperation movement, which is supported by not a few Hindu, Muslim and Sikh papers, the Punjab press has been dominated by an anti-British policy which few papers try to conceal. In the case of the Sikh press Government's supposed opposition to the Gurdwara reform movement, the happenings at Guru-ka-Bagh and the passing of the Gurdwara Act were additional reasons for its hostile attitude towards Government. The *Akali-te-Pardesi* went so far as to say that it had been trying to end British rule, and that such an achievement would be as beneficial to the Sikhs as was the termination of the Mughal régime. So far as the Turkish question is concerned, almost all Mussalman papers represent England as the most implacable enemy of the Turks. Never before in living memory has the attitude of the Punjab press towards Government been of such open hostility as it is to-day. Several papers—Hindu, Muhammadan and Sikh—have been openly urging the people to end " the rule of the bureaucracy ".

Inter-communal attitude.

462. At one time qaurrels used to be rife between the organs of the Aryas on the one hand and of the Muhammadans, Ahmadis, Sikhs, Sanatanists or Dev Samajists on the other. Sparring between the Christian paper the *Nur-Afshan* and Arya and Ahmadi publications was also of frequent occurrence several years back. These encounters were exclusively religious and, owing chiefly to Government's determination not to tolerate them, have not now been witnessed for years, although the reconversion of Malkana Rajputs bids fair to foment a controversy between the Arya and Muslim papers. The Hindu-Sikh controversy also has been laid to rest, its last echoes having been heard in connection with the Sikh demands in regard to the Reforms. This may be attributed in no small measure to the fact that almost the whole Sikh press identified itself with extreme Congress politics. The differences between the Sikh and Muslim presses are also no longer acute: only some Muhammadan papers occasionally complain of Sikhs not allowing the Musslamans of certain

places to make the call to prayers, while Sikh journals occasionally find fault with Mussalmans for not permitting Sikhs to decapitate goats in certain localities. The Hindu-Muslim question, however, is of perennial interest and is almost always present in one form or another. The partition of Bengal and consequent agitation in 1905 and 1906 called forth bitter mutual comments in Hindu and Muhammadan papers. The demand of the Muhammadans for separate representation in connection with the Minto-Morley reform scheme accentuated the pre-existing causes of enmity in 1910. The breach was greatly widened during the following year by the vigorous anti cow-killing agitation carried on by Hindu papers, the counter-agitation by the Muhammadan press, the bitter campaign against the Aga Khan, the insistent clamour of Muslim papers for separate representation even in Municipalities and the movement fostered by it for the boycott of Hindu confectioners. In the opening months of 1914, however the Turkish troubles and the attitude of the Hindu community with regard to the Cawnpore mosque question, stimulated a vigorous campaign in the Muslim papers in favour of Hindu-Muslim unity. But the Katarpur riots of 1918 and the unsympathetic attitude adopted by the Hindu press in regard to the rioting in Calcutta again called forth anti-Hindu writings in Muhammadan newspapers. In 1919 the opposition to the Rowlatt legislation brought the organs of the two communities nearer together and the fraternisations of Hindus and Muslims on "the protest day" and at the Muharram and Dusehra celebrations was seized on, especially by the Hindu press, to lay stress on Hindu-Muslim unity. The support lent by the Hindus to the *Khilafat* movement and the propaganda for the attainment of *Swaràj* led to still further efforts on the part of the press in 1921 in the advocacy of this union. The action of the Hindus in suggesting legislation to stop cow-killing and indulging in agitation for the repeal of the Land Alienation Act were, however, opposed by the Muhammadan press, which doubted the sincerity of the friendly professions of their Hindu contemporaries. The Hindu papers, on the other hand, charged Muhammadans with not carrying into effect the decision of the Muslim League which asked them to abstain from kine-killing. And the murder and conversion to Islam of Malabar Hindus, the Multan riots, Hindu opposition to and

Muslim support of the policy of the Minister for Education and the recent reconversion of Malkana Rajputs have had the effect of greatly straining the relations between the Hindu and Muhammadan presses. It is only the more extremist papers like the *Bande Mataram*, *Siyasat* and *Zamindar* which in their hatred of British rule now write in favour of, or urge the necessity for, Hindu-Muslim unity. The vast majority of the papers no longer believe in this union, while Muhammadan journals like the *Watan* and *Gulzar-i-Hind* have been sceptical all along.

Characteristics of particular papers.

463. The leading papers may be classified as follows :—

(1) Extremist.— *Nation*, *Bande Matarām*, *Partap*, *Kesari*, *Zamindar*, *Siyasat*, *Akali-te-Pardesi*, *Gargaj Akali*, *Satjug*, *Kirpan Bahadur*, *Gurdwara*, *Desh*, *Sewak*.

(2) Moderate or Liberal.— *Tribune*, *Desh*, *Akhbar-i-Am*, *Muslim Outlook*, *Vakil*, *Paisa Akhbar*, *Khalsa Advocate*, *Khalsa*, *Khalsa Samachar*, *Loyal Gazette*.

(3) Loyal— *Punjabee*, *Victoria Paper*, *Watan*, *Gulzar-i-Hind*, *Islah*.

CHAPTER XIV.

ARCHÆOLOGY.

Early period: Asoka inscriptions.

464. Though the Punjab was the earliest seat of Vedic civilization, archæology has hitherto failed to discover any monuments or traces of the epic period. Not a single relic of the Macedonian invasion has been brought to light, and, as in the rest of India, the oldest archæological monuments in the Punjab are the Asoka inscriptions. Of these, two were inscribed on pillars which now stand at Delhi, where they were re-erected by Firoz Shah in about 1362, one having been originally erected at Topra at the foot of the Siwalik Hills in the Ambala district of this Province, and the other near Meerut in the United Provinces. Both the inscriptions are in the ancient Brahmi script, which is found in all the Asoka inscriptions excepting those at Shahbazgarhi and Mansehra in the North-West Frontier Province. The vast ruins of Takshasila (Taxila), now known as Shahdheri, in Rawalpindi district, remain to show the extent of the capital of the great Mauryan province which comprised the modern Punjab and the North-West Frontier Province. South-east of Takshasila is the tope of Manikyala, identified by General Sir Alexander Cunningham as one of the four great *stupas* mentioned by the Chinese pilgrim Fa Hian. It is the largest *stupa*, in Northern India, and is believed to have been built to commemorate the sacrifice of the Bodhisattva, who gave his body to feed a starving tigress. Near this great *stupa* is a smaller one, which contained a slab with a Kharoshthi inscription recording its erection during the reign of Kanishka early in the Christian era.

Buddhist remains in the Himalayan region.

465. In Kangra district a few remains testify to the prevalence of Buddhism in the Himalayan valleys of the north-east Punjab. Close to Pathyar, 6 miles south-east of Kanhiara (?Krishna-vihara), a votive inscription of a primitive type in both Brahmi and Kharoshthi has been found; and at Kanhiara itself an inscription, also in both characters, records the foundation of a monastery, and indicates the existence of Buddhism in that locality during the second century A. D. A much later inscription at Chari contained the formula of the Buddhist faith. The

existence of Buddhism in the south-west of the Punjab is demonstrated by the ruined *stupa* and inscription at Sui Vehar in the modern state of Bahawalpur, and by a similar ruin at Naushahra, 100 miles south-west of Sui Vehar.

Hindu remains in the hills.

466. The Punjab can show but few Hindu antiquities. To some extent this is due to the destructive action of the great rivers on whose banks the ancient cities lay, but the iconoclasm of the Möslem invaders was even more destructive. Thus the Arabic inscriptions on the Jama Masjid or Kuwwat-ul-Islam at Delhi record that material for the building was obtained by demolishing twenty-seven idol-houses of the Hindus, and their profusely carved but partially defaced pillars are still to be seen in its colonnades. But the early Muhammadans often preserved the ancient Hindu monuments which were free from the taint of idolatry, for in this very mosque stands the iron pillar erected by Raja Chandra, possibly Chandra Gupta II, an early king of the Gupta dynasty (A. D. 375-413). The Inner Himalayas, however, mostly escaped the Muhammadan inroads, and some ancient Hindu shrines have survived; but owing to the style of construction prevalent in the hills, in which wood enters largely, the remains are few and not of very great antiquity. Stone temples exist at Baijnath, where there is an inscription of 1239, and at Nurpur. Those in the Kangra fort were destroyed by the earthquake of April, 1905. In Kulu the stone *lingam* temple at Bajaura contains some sculptures of great age, and the temple of Parasurma at Nirmand on the Sutlej possesses a copperplate of Raja Samundra Sena of unknown date. The temple at Hidimba Devi at Manali, which bears an inscription cut among profuse wood-carving, recording its erection in the sixteenth century, and that at Nagar have conical wooden roofs presenting a type peculiar to the hills. All these places lie in Kangra district. In the Chamba State the Devi temples at Barmaur and Chitradi date from the eighth century A. D. They are of a different style from the two Kulu temples last mentioned, and their wood-carving is superior to that found at Manali. The temple at Triloknath in the Mandi State contains a Sarada inscription. The temples at Malot and Kathwar in the Salt Range are built in the Kashmir style.

Sites of ancient cities.

467. A few pre-Muhammadan buildings have survived; but the remains of numberless cities, many of them of great antiquity, testify to an early civilisation in the Punjab. But the brick ruins of which they are mainly composed give little indication of the style of building that prevailed. Nearly all the old cities of the Punjab were built on the banks of its great rivers. Such are Kafir Kot and Billot on the Indus; Jhelum, Darapur and Jobnathnagar on the Jhelum; Sodra, Chanyot and Shorkot on the Chenab; Lahore, Akbar, Bavanni, Harappa, Tulamba and Multan on the Ravi; Kasur and Depalpur on the Bias; and Ajudhan and Kehror on the Sutlej. Several cities, however, were placed on the smaller streams; as Pathankot on the Chakki, Jalandhar on the Kali Vehi, and Amba-Kapi on the Bagh-bacha, within the Punjab: and to the east of the Sutlej, but still belonging to the Punjab river system, are Sirhind on the Choya, Bhatner on the Ghaghar, Thanesar on the Sarusti, and Hansi on the Chitang. The few exceptions are Taxila, Manikyala and Sangala in the Punjab, and Tusham to the east of the Sutlej. But the choice of these positions was influenced by military or religious considerations, which must have led to their occupation at an early date. Both Taxila and Sangala are strong military positions, while Manikyala and Tusham were most probably only religious sites.

Taxila.

468. A detailed investigation is being made of the sites of two of these cities Taxila and Harappa. At Taxila, or Takshasila, the seat of the ancient Hindu University visited by Alexander, Sir John Marshall has recently brought to light the remains of a palace of the Assyrian style and a massive and imposing temple dedicated to Zoroastrian worship and resembling a Greek peripteral temple with the addition of a solid tower of the Likkurat type rising behind the shrine.

Harappa.

469. Harappa has been identified with the city of Po-fa-to-lo where the Chinese pilgrim Hiuen Tsang (circ. 400 A. D.) halted for two months to study the principles of the sect of the Sammitiyas. Harappa at that time was densely populated and provided with four *stupas* and twelve monasteries containing about a thousand monks, besides twenty Brahmanical temples. A site like the one at Harappa

would have yielded countless dwelling houses, religious buildings, and other valuable material relating to the culture and arts of the ancient Punjab. But the ruins have been subjected to continued exploitation for bricks by thoughtless Railway contractors and villagers. Already before General Cunningham's visit in 1853 A. D., the site had furnished brick ballast for more than a hundred miles of the Lahore and Multan Railway line. These depredations have, if anything, been carried on even more vigorously since General Cunningham's time, and it is patent that the town of Harappa has been built and rebuilt many times over with bricks obtained from this site. The people refer the ruin of Harappa to the wickedness of a Raja named Har Pal, or Hara Pala, who was in the habit of claiming the sovereign's rights at every bridal. At last, in the exercise of this royal privilege, he committed incest with a near relative, some say his own sister, others his wife's sister, or his wife's sister's daughter. The girl prayed to heaven for vengeance, and then the city of Harappa was instantly destroyed. The period of its destruction is vaguely said to be 1,200 or 1,300 years ago. If the date is correct, the city of Harappa must have been destroyed by Muhammad-bin-Kasim in A. D. 713 just 1,260 years ago.

Muhammadan architecture: (*a*) Pathan.

470. The Muhammadan architecture of North-Western India may be divided into three periods: (*a*) The Pathan 1191-1320; (*b*) The Tughlaq 1320-1556; (*c*) The Moghal 1556-1753. In the Pathan period the royal builders drew their inspiration from Ghazni, but their work was also much affected by Hindu influences for two reasons. They used the materials of Hindu temples in constructing their mosques and they employed masons imputed with the traditions of Hindu art.

(*b*) Tughlaq.

471. In the Tughlaq period, named after the house that occupied the imperial throne when the period commenced, all traces of Hindu influence have vanished, and the buildings display the austere and massive grandeur suited to the faith of the desert prophet unalloyed by foreign elements. To some the simple grandeur of this style will appeal more strongly than the splendid, but at times almost effeminate, beauty of the Moghal period. The best examples of both these periods were lost to the Punjab with Delhi; but numerous

inferior specimens still remain in the Punjab districts adjoining.

(e) Moghal.

472. The Moghals revived the splendours of Muhammadan architecture. Jahangir's reign saw the construction of the mausoleum of the Khan-i-Khanan. He also built the first of the three Moti Masjids or 'pearl mosques' in the Punjab at Lahore in 1617-18. Wazir Khan, Shah Jahan's minister, built the mosque still known by his name in Lahore, and his engineer Ali Mardan made the Shalimar garden near that city. The zealot Aurangzeb added little to the architectural monuments of his predecessors, but his reign produced the great Badshahi mosque at Lahore. After Aurangzeb's death ensued a period of decay. A feature of this period is the mosque with gilded domes, hence called '*sunahri*,' of which type one was built at Lahore.

Multan architecture.

473. The south-west of the Punjab has developed an architectural style of its own, distinguished by a blue and white tile decoration, quite distinct from the *kashi* tile-work of Lahore and Delhi. This style is exemplified by the tomb of the saint Rukn-ud-din at Multan, and that of the Nahar ruler, Tahir Khan, at Sitpur. The tomb of the famous saint Baha-ul-Hakk, the grandfather of Rukn-ud-din, dates from the thirteenth century, but it was injured at the siege of Multan in 1848, and has been entirely renewed. Lastly may be mentioned the Jahazi Mahal at Shujabad with its remarkable frescoes built by Muzaffar Khan in 1808.

Coins.

474. Among the most interesting of the archæological remains are the coins which are found in great abundance on the frontier and all over the Punjab. These take us back through the centuries to times before the invasion of India by Alexander, and for the obscure period intervening between the Greek occupation of the Frontier and the Muhammadan conquest, they are our main source of history. The most ancient of the Indian monetary issues are the so-called punch-marked coins, some of which were undoubtedly in existence before the Greek invasion. Alexander himself left no permanent traces of his progress through the Punjab and Sind, but about the year 200 B. C. Greeks from Bactria, an outlying province of the Seleukidan Empire, once more appeared on the Indian Frontier, which they effectively occupied for more than a century. They

struck the well-known Græco-Bactrian coins ; the most famous of the Indo-Greek princes were Apollodotos and Menander. Towards the close of this dynasty, parts of Sind and Afghanistan were conquered by Saka Scythians from Central Asia. They struck what are termed the Indo-Scythian and Indo-Parthian coins bearing names in legible Greek legends—Manes, Azes, Azilises, Gondophares, Abdagases. Both Greeks and Sakas were overthrown by the Kushans. The extensive gold and copper Kushan currency, with inscriptions in the Greek script, contains the names of Kadphises, Kanishka, Huvishka, and others. In addition to the coins of these foreign dynasties, there are the purely Indian currencies, *e.g.*, the coins of Taxila, and those bearing the names of such tribes as the Odumbaras, Kunindas and Yaudheyas. The White Huns overthrew the Kushan Empire in the fifth century. After their own fall in the sixth century, there are more and more debased types of coinage such as the ubiquitous *Gadhiya paisa*, a degraded Sassanain type. In the ninth century we again meet with coins bearing distinct names, the "bull and horseman" currency of the Hindu kings of Kabul. We have now reached the beginning of the Muhammadan rule in India. Muhammad-bin-Sam was the founder of the first Pathan dynasty of Delhi, and was succeeded by a long line of Sultans. The Pathan and Moghal coins bear Arabic and Persian legends. There were mints at Lahore, Multan, Hafizabad, Kalanaur, Derajat, Peshawar, Srinagar and Jammu. An issue of coins peculiar to the Punjab is that of the Sikhs. Their coin legends, partly Persian, partly Punjabi, are written in the Persian and Gurmukhi scripts. Amongst Sikh mints were Amritsar, Lahore, Multan, Dera, Anandgarh, Jhang and Kashmir.

The Archæological Department.

475. These relics of previous civilization have excited more interest in the British than in the inhabitants of India. Hindu architecture was destroyed by the Muhammadans ; the beautiful mosque adjoining the Qutab Minar at Delhi was plundered by the Moghals to build Humayun's tomb. At annexation these old buildings were rapidly decaying. But none but spasmodic efforts appear to have been made by even the British Government till 1870 when they established the Archæological Survey of India and entrusted it to General (afterwards Sir) Alexander Cunningham,

who was also the first Director-General of Archæology. The work of this Survey, however, was restricted to antiquarian research and description of monuments, and the task of conserving old buildings was left to the fitful efforts of the Local Governments, often without expert guidance or control. The first systematic step towards recognising official responsibility in conservation matters was taken by Lord Curzon's Government, who established the seven Archæological Circles that now obtain, placed them on a permanent footing, and united them together under the control of a Director-General, provision being also made for subsidising Local Governments out of Imperial funds, when necessary. The Ancient Monuments Preservation Act was passed for the protection of historic monuments and relics especially those in private possession and also for State control over the excavation of ancient sites and traffic in antiquities. Under the direction of Sir John Marshall, Kt., C.I.E., Director-General of Archæology, a comprehensive and systematic campaign of repair has been prosecuted, and the result of it is manifest in the present altered conditions of old buildings. One has only to see for example the Moghul buildings at Agra, Delhi, Lahore and Ajmer, in order to be convinced how the work of careful reconstruction and repair has converted these decayed and desecrated monuments with their modern excrescences into edifices of unrivalled loveliness. Another noteworthy feature of this work has been the rescue of many of these buildings from profane and sacrilegious uses. It is well known that the superb Pearl Mosque of Jahangir in the Lahore Fort contained a Government treasury, and the Sleeping Hall of Shah Jahan served as a Church for the British troops. Nor has research work been in any way neglected under the new order of things. A unique feature of it for the first time introduced under the guidance and advice of Sir John Marshall has been the scientific excavation of buried sites, such as Taxila and Harappa (*paras.* 468, 469).

Working of the Archæological Department in the Punjab.

476. The work of the Archæological Department is primarily twofold: conservation, and research and exploration. The archæological treasures of the Punjab are under the care of the Superintendent, Hindu and Buddhist Monuments, Northern Circle, Lahore, and of the Superintendent, Muhammadan and British Monuments,

Northern Circle, Agra. For the repair and conservation of the monuments the assistance of the Buildings and Roads Branch of the Public Works Department is invoked when necessary. Since the Reforms Archæology has become a central subject. The list of monuments gazetted by Local Government is therefore being scrutinised by the Archæological Department to ensure that no burden is put upon central revenues which is not absolutely necessary.

The Lahore Museum.

477. Many interesting archæological remains are stored in the Lahore Museum, which was built from a fund raised throughout the Province as a permanent memorial of the 1887 Jubilee of Queen Victoria. The object was to provide a Provincial Institution containing a museum, library and lecture rooms with a sufficient instructional staff and capable in connection with the School of Art of gradual expansion into a Technical College. The foundation stone was laid by the late Prince Albert Victor, Duke of Clarence and Avondale, on February 3rd, 1890, and the building was completed in 1893. At the end of that year the institute was utilised for the Punjab Exhibition opened in December 1893.

Contents of the Lahore Museum.

478. The building together with the Lecture Hall, which is used for educational lectures and exhibitions, and the Mayo School of Arts forms a handsome block in late Moghal style situated next to the market and opposite the University Senate Hall. The general plan of the building resembles a letter E with the entrance porch in the centre of the back face. The centre gallery is devoted first to a few fine specimens of carved Moghal doorways and woodwork and secondly to a fairly representative collection of Indian paintings dating from the Indo-Persian, Moghal, Sikh and Kangra schools up to a few examples of Modern Indian paintings of the new Calcutta School. The cataloguing and arranging of this collection is now complete. The south wall of the gallery has been decorated in Persian style by the students and teachers of the Mayo School of Arts from designs by the present Vice-Principal, M. Sher Muhammad, who also designed the whole of the wood and plaster work seen in the building. Two galleries run east and west of the centre gallery, that on the west being devoted to models, raw products, etc.; and that on the east to Art Industries of all kinds amongst which may be noted fine collections of musical in-

struments, *huqas*, jewellery, textiles, pottery, and a small collection of armour. At the end of the east gallery is the gallery running parallel to the centre containing the famous collection of Græco-Bactrian Gandhara Sculptures ; this collection is now being catalogued by the Superintendent of Hindu and Buddhist Monuments, Northern Circle, who has already written a handbook entitled the " Buddha story in Stone," which is issued by the Museum. Parallel to the sculpture gallery is a smaller gallery in which are shown interesting small collections of Tibetan painted banners, statuettes, carved curios, Nepalese brass work, and a case of manuscripts. The Museum has been extended by addition of one large gallery, a library, office and record room, opening out of the centre gallery at the back. This gallery will be shortly utilised for the proper exhibition of the Gandhara Sculptures. The entire building is lighted from the north and is of lofty dimensions which assures a pleasant temperature and restfulness to the eyes. The main collections, which make the Museum one of the most representative and interesting of Provincial Museums, are Archæology, Art, Industries, and Coins. The Museum is most popular ; the average yearly visitors number 400,000 ; one day a week, Wednesday, being reserved for students and others wishing to study the collections in peace and quietness.

The famous gun *Zamzamah*.

479. In front of the entrance to this building there stand on raised platforms two old Sikh canon, while the famous gun *Zamzamah*, mentioned in Rudyard Kipling's " Kim " known by the Sikhs as the *Bhangian-wali Top*, which was formerly placed in front of the Senate Hall on the opposite side of the road, has now been removed westwards to the crossing near the Fire Brigade. This gun is one of the largest specimens of native casting in India, and was made in A.D. 1761 by Shah Wali Khan, Wazir of Ahmad Shah Durani, by whom it was used at the battle of Panipat. After the departure of Ahmad Shah the gun was left in the possession of the Sikh Sardars of the *Bhangi Misl* whence its name, *Bhangian-wali Top*. It came to be regarded by them as a talisman of supremacy. Ranjit Singh eventually possessed himself of it and it was employed by him at the siege of Multan in A.D. 1818. From that date until its removal in 1860 it was placed at the Delhi Gate of the City of Lahore. It is still regarded by many as an

incarnation of Mahadeo. The inscription on the gun opens as follows :— " By order of the Emperor (Ahmad Shah) Dur-i-Duran Shah Wali Khan the Wazir made this gun named *Zamzamah*, the taker of strongholds. The work of Shah Nazar." Then follow a number of verses. The last lines give the date of the gun as 1171 A.H. or 1761 A.D.

CHAPTER XV.

AGRICULTURE.

[And he gave it for his opinion, that whoever could make two ears of corn, or two blades of grass, to grow upon a spot of ground where only one grew before, would deserve better of mankind, and do more essential service to his country, than the whole race of politicians put together.—Swift. Gulliver's Travels, II-vii.]

Main Agricultural Statistics of the Punjab.

480. The total area of the Punjab including the States within its boundaries is 86 million acres, of which 60 million acres are in British territory. Of this on an average 27 million acres are cropped and 18 million acres consist of cultivable waste and fallow, leaving a balance of 15 million acres. Out of this, 5 million acres consist of Simla and Kangra mountain areas and the river beds of Gurgaon district, which are practically unculturable. The total area of the Punjab is slightly greater than that of the United Kingdom (77 million acres), and the area excluding Indian States slightly greater than that of Great Britain. Of the area returned as culturable in Great Britain (32 million acres) more than half is under grass (17 million acres). This in the Punjab would be termed culturable waste or fallow. Grass land in Britain often pays better than cultivation. Of the cultivated area (14½ million acres) in Great Britain wheat occupies 2 million acres, barley 1½ million, and oats over 3 million acres as compared with 9 million acres wheat in the Punjab. In live-stock the main difference relates to horses, of which there are nearly 2 million in Great Britain as compared with 350,000 in the Punjab. There are 29 million sheep as compared with 4½ million in the Punjab. It is roughly estimated that Rs. 30 per acre is sufficient capital for farming in the Punjab, whereas £15 is required in Britain. Manures are largely used in Britain for crops and scarcely used at all in the Punjab. Manures in the Punjab are relatively more expensive, and the resultant increase in return is less than in England. The yield of wheat averages 24 maunds in England as compared with 10½ in the Punjab. This indicates only too clearly the leeway the Punjab has to make up before her agriculture can be considered to be in a satisfactory state.

Statistics of important crops.

481. The area and produce of important crops is roughly indicated as follows :—

		Harvest.	Sown area (million acres).			Produce (million tons).	Approx. value (crores rupees)
			Irrigated.	Unirrigated	Total.		
Cereals	Wheat	Spring	5·0	4·0	9·0	2·8	16
	Barley	„	·4	·7	1·1	·3	1
	Rice	Autumn	·6	·2	·8	·4	2
	Maize	„	·5	·6	1·1	·4	2
	Bajra	„	·4	2·0	2·4	·3	1
	Gowar	„	·2	·8	1·0	·1	½
Pulses	Gram	Spring	1·0	2·9	3·9	·8	1
Oilseeds		„	·4	·7	1·1	·1	1
Sugarcane		Autumn	·35	·05	·4	·3	3
Fibres	Cotton	„	1·4	·1	1·5	·4 (bales)	

These figures, approximate though they be, emphasise the pre-eminent importance of wheat, which is more valuable than all the other crops put together. They also shew how irrigation is devoted mainly to the more expensive crops. Cotton is almost entirely irrigated.

Harvests.

482. There are two harvests, the autumn or *kharif*, and the spring or *rabi*. The autumn crops are mostly sown in June and July and reaped from September to December. Cotton is often sown in March. Cane planted in March and cut in January and February is counted as a *kharif* crop. The spring crops are sown from the latter part of September to the end of December. They are reaped in March and April. In the Punjab roughly three-fifths of the crops belong to the spring harvest.

Implements of Husbandry.

483. The implements of husbandry are simple but effective in a land where as a rule there is no advantage in stirring up the soil very deep. With his primitive plough (*hal*) and a wooden clodcrusher (*sohaga*) the peasant can produce a tilth for a crop like cane which it would be hard to match in England.

Rotations.

484. The commonest rotation in ordinary loam soils is to put in a spring and autumn crop in succession and then let the land lie fallow for a year. Unless a good deal of manure is available this is the best course to follow, even in the case of irrigated land. Some poor hard soils are only fit for crops of coarse rice sown after the embanked fields have been filled in the monsoon by drainage from the surrounding waste. Other lands are cropped only in the autumn because the winter rainfall is very scanty. Flooded lands are often sown only for the spring harvest.

Methods of cultivation: (*a*) The Mountain and Submontane zones.

485. Agricultural methods are adapted to the climate and geological conditions prevailing in different zones. In the mountain zone, above 5,000 feet, the fields are often very minute, consisting of narrow terraces supported by stone revetments built up the slopes of hills. That anyone should be ready to spend time and labour on such unpromising material is a sign of pressure of population on the soil, which is a marked feature of some hill tracts. Below 8,000 feet the great crop is maize. Potatoes have been introduced near our hill stations. The chief pulse of the mountain zone is *kulath* (Dolichos Biflorus), eaten by the very poor. Wheat ascends to 8,000 or 9,000 feet, and at the higher levels is reaped in August. Barley is grown at much greater heights. Buckwheat (*ugal*, *trumba*, *drawi*), amaranth (*chaulai*, *ganhar*, *sariara*), and a tall chenopod (*bathu*) are grown in the mountain zone. Buckwheat is common on poor stony lands. The only comparatively flat land is on the banks above river beds, which are devoted to rice cultivation, the water being conducted to the embanked fields by an elaborate system of little canals or *kuhls*. This is the only irrigation in the mountains, and is much valued. The submontane zone has a rainfall of from 30 to 40 inches. Well irrigation is little used and the dry crops are generally secure. Wheat and maize are the great staples, but gram and *chari*, *i.e.*, *jowar* grown for fodder, are also important.

(*b*) The North-Central Punjab Plain.

486. The best soil and the finest tillage are to be found in the north central Punjab plain. The rainfall varies from 25 to 35 inches. One-third of the cultivated area is protected by wells, and the well cultivation is of a very high class in Ludhiana and Jullundur, where

heavily manured maize is followed by a fine crop of wheat, and cane is commonly grown. In parts of Sialkot and Gujrat the well cultivation is of a different type, the area served per well being large and the object being to protect a big acreage of wheat in the spring harvest. The chief crops in this zone are wheat and *jowar*.

(c) The north-west plateau.

487. The plateau north of the Salt Range has a very light white sandy loam soil requiring little ploughing and no weeding. It is often very shallow, and this is one reason for the great preference for cold weather crops. *Kharif* crops are more liable to be burned up. Generally speaking the rainfall is from 15 to 25 inches, the proportion falling in the winter and spring being larger than elsewhere. There is practically no canal irrigation. The well irrigation is unimportant and in most parts consists of a few acres round each well intensively cultivated with market-gardening crops. The dry crops are generally very precarious. The Indus valley is a fine tract, but the harvests fluctuate greatly with the extent of the floods.

(d) The south-western plain.

488. In the south-western plain three-fourths of the cultivation is protected by canals or wells, or by both. In the lowlands near the great rivers cultivation depends on the floods brought to the land direct or through small canals which carry water to parts which the natural overflow would not reach. In the uplands vast areas formerly untouched by the plough have been brought under tillage by the help of perennial canals, and the process of reclamation is still going on. The Thal is a large sandy desert which becomes more and more worthless for cultivation as one proceeds southwards. In the north the people have found out of late years that this unpromising sand cannot only yield poor *kharif* crops, but is worth sowing with gram in the spring harvest. The expense is small, and a lucky season means large profits. These profits are entirely due to the railway which enables a large harvest to be marketed at a reasonable price. In pre-railway days it did not pay to grow gram in large quantities as there was no way of disposing of a surplus. In Dera Ghazi Khan a large area of "*pat*" below the hills is dependent for cultivation on torrents The favourite crop in the embanked fields into which the water is diverted is *jowar*.

(e) The south-eastern plain.

489. In the south-eastern Punjab, except in Hissar and the State territory on the border of Rajputana, the rainfall is from 20 to 30 inches. In Hissar it amounts to some 15 inches. These are averages ; the variations in total amount and distribution over the months of the year are very great. In good seasons the area under dry crops is very large, but the fluctuations in the sown acreage are extraordinary, and the matured is often far below the sown area. The great crops are gram and mixtures of wheat or barley with gram in the spring, and *bajra* in the autumn, harvest. Well cultivation is not of much importance generally, though some of it in the Jumna riverain is excellent. The irrigated cultivation depends mainly on the Western Jumna and Sirhind Canals, and the great canal crops are wheat and cotton. This is the zone in which famine conditions are still most to be feared.

Soil of the Punjab mainly alluvial and fertile.

490. The major portion of the Province contains a deep alluvial soil. It would be difficult to say whether, hitherto, this has proved an advantage or a disadvantage. An alluvial soil possesses great natural fertility ; it yields good crops with very little cultivation ; it is less dependent on manures than other soils and does not require the same elaborate rotation. The soil varies from a rich to a light sandy loam, containing very little clay. It requires very little artificial drainage, unless its natural condition has been altered by excessive irrigation and it requires the expenditure of very little capital to bring it under cultivation and to maintain its crop bearing capacity. In these respects, the people of the Punjab are far more fortunate than agriculturists in other countries.

Fertility of the soil results in slackness of the cultivator.

491. Until the soil of the Province shows signs of exhaustion, there will be no full appreciation of that feature of agriculture in old settled countries which consists in putting into the land what is relatively cheap in order to get out from it what is relatively dear. So long as the cultivator can reap a crop without much exertion and without the exercise of much intelligence, he will tend to be satisfied with what nature yields. When nature inclines to refuse her favours until some material in the way of manures and some energy in the way of physical aeration are supplied, the cultivator will begin to look around for

fertilisers that will repay their use, and for methods that will yield him profit.

Wheat: the most important Punjab crop.

492. As has already been pointed out (*para.* 481) wheat (*triticum sativum*, vernacular *kanak*) is by far the most important Punjab crop both in value and in acreage. It is the staple food of most Punjabis, and is also the chief crop for sale and export in most districts. The area is generally over nine million acres, of which half is irrigated and half unirrigated or *barani*. The area under irrigation is very constant from year to year, whereas the *barani* area, depending as it does on rainfall, is liable to considerable variation, thus bringing the total area sometimes to nearly 10, and at others to only just over 8 million acres. As the total area under all crops is generally about 28 million acres, it will be seen that wheat constitutes from 30 to 35 per cent. of the area of crops. It may be of interest to note also that 40 per cent. of the wheat area of India is found in the Punjab. The outturn on unirrigated land may be taken to vary from ·25 to ·3 ton (7 to 8 maunds) per acre, and on irrigated land at ·45 to ·5 ton or 12 to 13¼ maunds. A wheat field in the Punjab generally consists of a number of different types of plants with one predominating. Over 40 such types have so far been isolated. They all belong to one or other of the three sub-races: *Triticum durum* ("*wadanak*" or macaroni wheats), *Triticum compactum* (dwarf wheats), and the ordinary *Triticum vulgare*.

Soils suitable for wheat.

493. Wheat is grown all over the Province and on all classes of land except the very lightest unirrigated high land. The heaviest type of soil is not well suited to wheat growing in this dry climate; but such very heavy land is very rare in the Punjab. The districts producing the greatest quantities are those watered by the "Lower" (western) perennial canals, for the conditions of the water-supply there favour the growing of a very high proportion of wheat. In fact on most of the perennially irrigated areas wheat occupies between 40 and 50 per cent. of the total area cropped in the year. The well lands in the central districts are credited with the heaviest yields per acre: this is due more to the fact that wells are sunk on selected soil, which is also manured and very carefully cultivated, than to the difference in the nature of the water-supply.

Seasons for wheat sowing and harvesting.

494. Wheat sowing in the Province starts in the middle of October, and may continue into December, or even to early January in some parts, though crops sown in December and January will not give a maximum yield. The time of harvesting is remarkably regular year after year. In most places in the plains it starts on the festival of Baisakh, about the 12th or 13th of April. In the south-east Punjab harvesting starts a fortnight earlier. The harvesting has to be finished as quickly as possible, for in this hot dry weather the wheat ripens very suddenly, and any delay means very serious loss from the shedding out of the grain.

Marketing of wheat: The Lyallpur Co-operative Commission shops.

495. In the main the wheat intended for sale, and especially that intended for export, used to be disposed of as soon as possible. But where the means of transport are unsatisfactory, this is impossible; and, moreover, everywhere the strengthened position of the farmers is accompanied by a tendency to hold grain for the later rise in the market price. War conditions have accentuated this, but storing large quantities of wheat in the Punjab is liable to result in the loss of a considerable proportion of the grain through the destruction caused by weevils in addition to that which may be eaten by rats. It is however being more and more widely realised that without efficient marketing methods it will be impossible for the *zamindar* to obtain much advantage from improvements in technical agriculture. The English farmers contain some of the most efficient in the world on the technical side, but their failure to market scientifically has nearly brought them to ruin. In the endeavour to solve this problem the Co-operative Department has opened five commission sale shops in the Lyallpur district for the sale on commission of their members' produce. Over Rs. 4½ lakhs of produce were sold through them in 1921-22. The amount would have been much larger but for the poor cotton crop and the embargo on wheat export, with the consequent withholding of much of the wheat from the market in the Canal Colonies. Nevertheless, the shops' business has increased threefold, and, as they seek no profit, their members are ensured just dealing and minimum charges. 139 societies and 477 individuals have taken shares. The management is in the hand of a Committee elected by the general meeting. These shops, in addition to saving money

for their members, have a high educative value. They bring their members together for discussion, and teach them the elements of efficient business practice. They also put an effective check on the money-lending activities of the *Mandi*. With efficient management and loyal members, they should have a big future.

Increasing value of wheat chaff (*bhusa*) for fodder

496. The value of wheat *bhusa* (chaff used for fodder) is steadily increasing. Roughly the proportion between the yield of *bhusa* and grain in the Punjab is rather less than $1\frac{3}{4}$ of *bhusa* to one of grain. A few years ago *bhusa*, though always valued in the *barani* districts or in the towns, was only worth annas 4 per maund in villages, in districts of plentiful irrigation, or in the riverain tracts. It was especially cheap in the canal colony villages. But for some years the price has been rising steadily, and this has been greatly accentuated by the army purchases during the war, so that it now frequently sells for a rupee a maund or more in the village. Thus the value of the *bhusa* has become an important part of the total value of the crop. *Bhusa* mixed with such chopped green fodder as is available forms the basis of the bulky food for cattle during the cold weather and early summer.

Wheat export.

497. The surplus wheat of the Province to the extent as a rule of about $\frac{1}{2}$ to $1\frac{1}{2}$ million tons is exported, chiefly to Europe. At times, however, the proportion going to the United Provinces becomes considerable. The export from Karachi is carried on by big exporting houses, who have agents and sub-agents all over the main wheat-selling areas. There is no especial centre of this trade; the various *mandis* (organized markets) drawing produce only from within a circle whose radius is the distance a cart can come, say 20 miles or so; and large quantities are despatched from even the smallest railway stations direct to Karachi. In the *mandis* the trade is carried on by commission agents (*arhtis*), who rent the market spaces and sell to the best buyer, ostensibly in the interest of the farmer. They take a commission of about $1\frac{3}{4}$ per cent. from the seller, and this also covers the labour charges involved in weighing and delivery. The commission and charges have been reduced in the Lyallpur Co-operative Commission shops (*para.* 495) which have no other interest to serve but that of the *zamin-*

dar. For the export trade the value of wheat at present depends only on its cleanliness, freedom from admixture of barley, and general condition. White grain is preferred, but rarely is any premium given for superior strength or hardness, so that naturally it is the softest wheat which is exported. At the small railway stations the grain is bought directly by the firms, who advance 90 per cent. of its price against a railway receipt, and pay the remainder when the cleanliness has been estimated on arrival at Karachi.

The Lyallpur Grain Elevator

498. The Grain Elevator at Lyallpur was commenced in 1913. Its completion in 1922 marks a definite step in the agricultural development of the Province. Certain improvements have been carried out, such as the provision of subsidiary elevators and the strengthening of the bins. Some subsidiary elevators were made locally under the supervision of the Electrical Engineer to Government, Punjab, and have been fitted in position. The main function of an elevator is to provide pure wheat of a standardised quality for export and to arrange for its storage till the owner wishes to export. Ordinarily Indian wheat is sent to Karachi in gunny bags. The wheat is taken out there and classified and re-bagged for loading on the ships. When it reaches a European port, the bags are broken up and the wheat generally put in an elevator. As will be seen, the handling charges and cost of bags ultimately falls on the producer. If bulk loading were adopted on the railways and ships, the handling charges would be appreciably reduced. This, however, entails erecting elevators at Karachi, and many more in the exporting tracts. Without a comprehensive scheme of this kind there is a limited prospect only for the Lyallpur elevator. The whole question requires thorough investigation by a committee on which railway, shipping and exporting agencies are represented.

Flour mills: their importance in the wheat market.

499. There are several big roller mills in the Province and at Delhi, and although the demand by these mills is in itself very inconsiderable in comparsion to the total produce, yet they have a greater importance in the market than is represented by the amount they purchase. There is practically no forward trade in wheat, and consequently the mills, or the contractors who supply them, must purchase regularly whatever the state of the market.

Barley: reasons for small area grown.

500. The world's crop of barley (*hordeum vulgare*, vernacular *jau*) is estimated at about one-third the weight of the world's wheat crop. But the acreage of barley in the world is not a quarter that of wheat. In some places (*e.g.*, England) a large area of barley is grown because it can command a high price for malting in the preparation of alcoholic drinks; in others a large area is grown because the climatic conditions are not favourable to the growth of other cereals. Where neither of these causes comes into play the area of barley is generally but a small proportion of the cereal area, and much smaller than the area of wheat. In all India the barley crop usually occupies seven or eight million acres as against about 30 million acres of wheat. Most of this barley is grown in the United Provinces, where the area of barley is nearly as great as that of wheat. The area in the Punjab is commonly rather over a million acres, or about 4 per cent. of the total area of all crops and only about 1/9th of the wheat area. It is grown chiefly in the districts of Hissar, Ferozepore and Gurgaon.

Mixture of barley with gram and wheat: doubtful advantages of this plan.

501. Barley is usually grown mixed with gram on light soils, and with wheat on the heavier land. These mixtures are favoured from the point of view of insurance against extremely dry winters; for gram will succeed where barley will practically fail for want of water, and barley occupies much the same position in regard to wheat. The question of the soundness of the practice of growing these mixtures needs local experimental investigation. There is little doubt that many farmers have a very exaggerated idea of the increased yield obtained by this practice of growing one acre of mixture as against growing half an acre of each crop. And it must be remembered that when the grains are not separated by the farmer, but are sold in a mixed state, the seller is always and naturally liable to get considerably less for the mixture than he would for the same quality of grain after separation.

Diminished price obtainable for wheat owing to barley admixture.

502. Gram and barley, though grown mixed, can easily be separated for sale either by harvesting separately or after threshing; and in point of fact the farmer generally sells them more or less perfectly separated. But wheat and barely when grown together are not so easily

separated, and the grower often sells a mixture in which the barley content may be 30 per cent. or 50 per cent. Although the exporting firms are generally trading in barley and wheat at the same time, and altough it costs comparatively little to separate the two at Karachi, where elaborate machinery has been installed for the purpose, yet it is natural that the price obtained for the wheat is depressed by the presence of the barley. For one thing the buyer may lose through deliberate or unavoidable mistakes in the estimation of the proportion of barley by his staff. Moreover, the mixture is even less favoured by other buyers, who have no machinery for a proper separation of the two grains. It is a matter for actual investigation as to whether the gain in yield which results from sowing mixtures compensates for the depression of the price which results from them. Prior to such investigation a final opinion cannot be formed.

Market rates should be quoted on a pure wheat basis.

503. To ensure pure wheat in the colony markets, however, it is desirable that all buyers, including the exporters, should calculate their prices on the assumption that the wheat will be pure and make deductions for any admixture of barley. At present the rates generally quoted in the markets are for wheat containing 2 per cent. of barley ; and though it is true that a bonus is given for purity beyond this basis, such a bonus will seldom reach a small grower. If market rates were calculated on a pure wheat basis there would certainly be further improvement in the freedom of the colony wheats from barley.

Suitability of Punjab barley for malting.

504. In the process of malting, the barley is caused to sprout slightly, during which process the starch in the grain is changed to sugar. By subsequently fermenting the " malt " of sprouted grains the sugar is further changed and alcohol is produced. In malting the first requirement of the grain is that it should have a very high " germinating capacity " (*i.e.*, a high proportion of living seeds capable of sprouting), and that the grains after moistening should all germinate equally rapidly. Barley suitable for malting can be sold in England at a price equal to that of wheat, and sometimes higher. The suitability of Punjab barley for malting is thus a matter of some importance and worthy of investigation. Punjab barley has not the appearance which is favoured in England for malting

barley ; but, on the other hand, it has a high germinating capacity, and has a good reputation among Indian brewers. There is some reason to believe that (before the War) it was coming into higher favour in Europe for malting purposes, since the exporting firms here were sometimes paying more for barley than would appear to be warranted by its value for feeding purposes.

Inferiority of barley to wheat as food for human beings.

505. Barley is everywhere regarded as inferior to wheat as a food for human beings. This is due chiefly to the fact that barley flour cannot be made into bread, though a comparatively small proportion of barley flour can be mixed with wheat flour for bread making. In some European countries this has always been a common practice. It is not a common practice in the Punjab. For flour making there is a further disadvantage to barley, in that it is more difficult to separate the flour from the husk, and the amount of bran is higher.

Rice.

506. Rice (*oryza sativa*, vernacular *dhan*), while occupying 40 per cent. of the nett cropped area of food-grains in India, is relatively unimportant in the Punjab, where the area is generally less than 9 lakhs of acres, or a little over 1 per cent. of the rice acreage of India. In the Punjab it is mainly grown in Kangra, Gurdaspur, Amritsar and Gujranwala. The plant grows best in heavy soil, where plenty of water is available. Stagnant water is, however, unfavourable to its success.

Other cereals: Maize, *jowar* and *bajra*.

507. In addition to rice, maize, *jowar* (great millet), and *bajra* (spiked millet) are the staple autumn cereals. These three crops fulfil similar functions in different districts. Maize is grown where rainfall or irrigation is plentiful ; *bajra* in the dry parts of the Ambala and Rawalpindi Divisions, where it is a very important crop; *jowar* occupies an intermediate position, being less drought resistant than *bajra*, but much more so than maize. All three can be grown either for grain or fodder; in the latter case they are sown more thickly, though in dry years crops grown are often used as fodder. Maize is mostly grown in the submontane districts, its chief centre being Jullundur. In the canal colonies maize is chiefly grown for grain, whereas *jowar* is almost exclusively grown for fodder

(*chari*), and generally now a days as a mixture with *guara* (*cyamopsis psoralioides*), a hardy *kharif* crop grown both for seed and as a fodder crop. *Bajra* is rarely grown in the colonies. The area under maize, depending as it does on irrigation and safe rainfall conditions, does not vary much from year to year. The area of *jowar* and *bajra* fluctuates enormously, *e.g.*, the total area of these two was 3 million acres in 1915 and 4½ million in 1916.

Gram.

508. Of the pulses by far the most important is gram (*cicer arietinum*, vernacular *channa*). It is a leguminous *rabi* crop. It is probably indigenous in South-Eastern Europe or South-Western Asia. Its cultivation in India is ancient, as its Sanskrit name *chanaka* indicates. The Romans called it *Cicer*. It is called *arietinum* from the resemblance of the seed when forming in the pod to the head of a ram. The area grown in the Punjab is about 4 million acres, of which only about 12 per cent. is irrigated. The largest areas are found in Ferozepore, Hissar and Rohtak. Gram is the earliest sown of the *rabi* crops. It is sown from the middle of September to the middle of October. It is generally sown on land which lay fallow in the kharif, but is also often grown after early fodder crops, such as *jowar* and *guara*. It is often sown mixed with wheat, linseed, *taramira*, *sarson*, barley or peas. Gram is sown on all soils from the heaviest clay loams to the lightest sandy loam ; but it is on the former class of soil that it yields best, and is generally grown alone in such cases. This crop grows better than any others on the lightest soils of the Province, and is often in such cases grown mixed with wheat or with barley. Should winter rains be favourable, wheat or barley gives a good yield, whereas the gram subsists best when rain fails. The seed bed is generally roughly prepared, but a deep tilth is favourable, though the soil need not be pulverized as in case of wheat.

Oilseeds.

509. Of the Punjab oilseeds *toria* and *sarson* (rape) only are important as field crops, though *taramira* (*eruca sativa*) is grown fairly extensively in dry tracts. *Rai* (*brassica juncea*) is only rarely grown in the Punjab. *Sarson* (*brassica campestris, Var. glauca*) and *toria* (*brassica campestris, Var. toria*) differ considerably as regards their habit and methods of cultivation. *Sarson* is generally grown mixed with gram, barley,

or wheat, and rarely grown alone. It is mostly grown *barani*, and sown along with the other crop in the mixture generally from October to November. It is used largely as fodder or as a vegetable (*sag*). *Toria*, on the other hand, is almost invariably grown alone and with irrigation. It is an important crop in the canal colonies. It is sown early in September, or even sometimes at the end of August, and is hence a *zaid kharif*, or late *kharif*, crop. It ripens in January, whereas *sarson* ripens in March.

Sugarcane.

510. The proportion which sugarcane bears to the total area of crops in the Punjab is usually rather less than $1\frac{1}{2}$ per cent. None the less the crop has an importance greater than that indicated by these figures. For the value of the return per acre is high in comparison with that from most crops in this Province ; and, moreover, the amounts of labour, manure, and water which go to the production of an acre of sugarcane are several times greater than the amounts expended in the production of an acre of most other crops.

Area and yield.

511. India is in point of area the chief grower of sugarcane in the world (total area in India rather less than $2\frac{1}{2}$ million acres as a rule), and the Punjab has the second largest area among the provinces, the area in the Province usually varying between $3\frac{1}{2}$ and 4 lakhs of acres. But on the whole India is far below other countries in the matter of yield per acre, and the Punjab is similarly far below the rest of India in this matter. Thus the yield of cane in Java and the Sandwich Islands is said to be over 30 tons per acre, and the yields of refined sugar about $3\frac{1}{2}$ and 8 tons respectively. In Bombay and Madras the yield of raw sugar per acre is generally estimated at between $2\frac{1}{2}$ and 3 tons per acre. The official estimates for the Punjab are not generally much over $\frac{3}{4}$ of a ton of raw sugar or *gur* ; and certainly 1 ton per acre is an average good crop in most parts of the Province.

Varieties of sugarcane.

512. The bulk of the cane grown in the Province belongs to only two varieties. Most of the cane grown for the production of sugar is of the variety called *katha*, while that grown for chewing consists mainly of the variety called *ponda*. *Ponda* is a thick green cane not unlike those grown in other parts of the world. *Katha*, on the other hand, is a thin fibrous cane, not more than half an inch thick. The best areas for

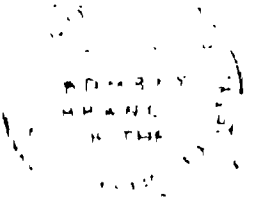


DIAGRAM I.

Diagram showing the sown areas of :—

American cotton ..... ———

Desi cotton ..... ———

and annual average price of American Middling Fair in Liverpool in January preceding sowing. .....

in the Canal Colonies of the Punjab.

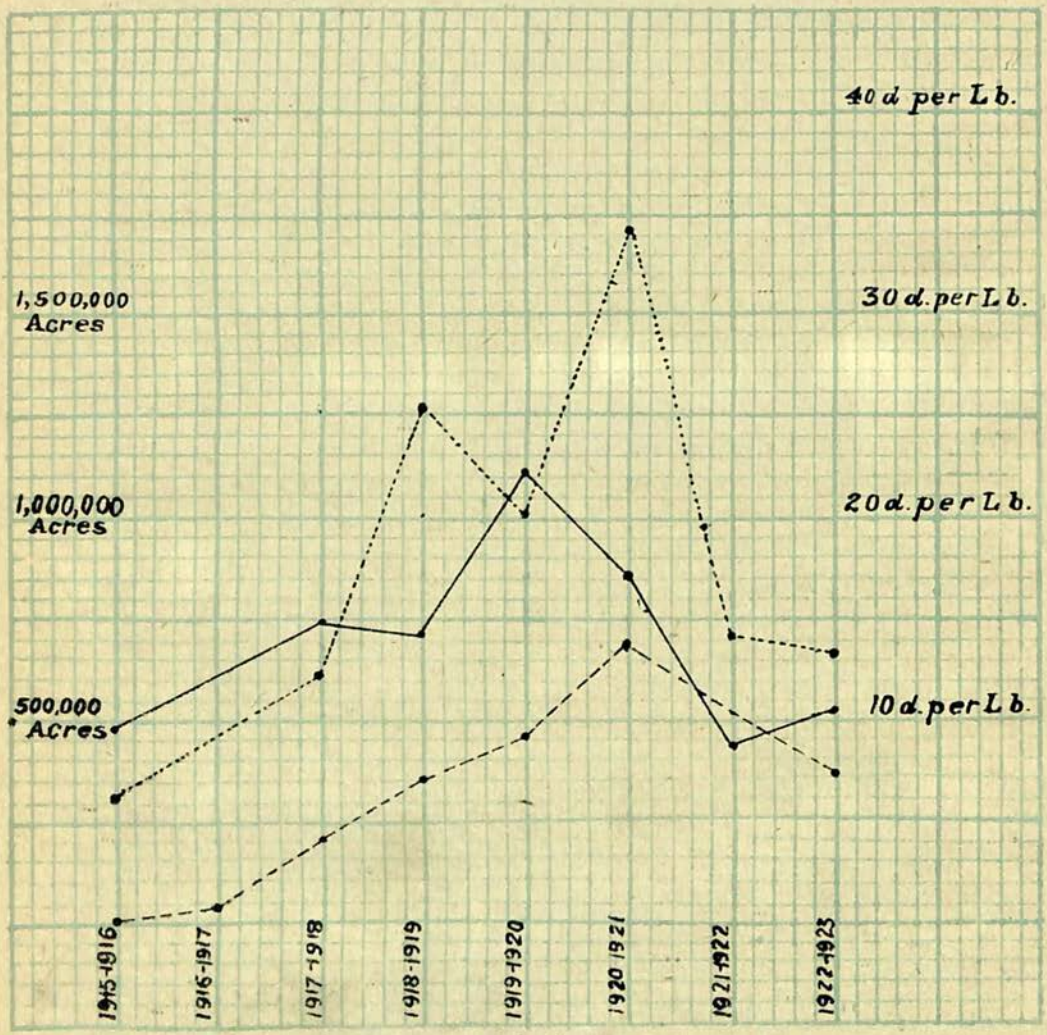


Fig. 24.

the growth of cane are in the south-east of the Province in the districts of Rohtak and Karnal. Next after these come the eastern districts such as Gurdaspur and Sialkot. It is only in such parts that any varieties thicker than *katha* are grown for the extraction of sugar.

Suitable soils for sugarcane.

513. The rainfall in the Punjab plains is nowhere sufficient for the growth of sugarcane ; and thus this crop can only be grown either under irrigation or where, as in the beds of rivers, the underground water replaces irrigation. It can only be grown profitably on land which is at least moderately heavy ; it is useless to try to grow sugarcane on the lightest soils.

Seasons.

514. The sugarcane crop is planted in March in this Province, and it is harvested in the winter from December to February or early March. The crop thus actually occupies the land for almost exactly a year ; but for practical purposes it must be regarded as occupying the land for upwards of fifteen months. For the soil must be particularly thoroughly prepared for cane, and moreover after the cane is harvested the soil seems to be left in very poor tilth and encumbered by the stumps. Thus more time and labour is required to prepare sugarcane land for, say cotton, than to prepare the stubbles of wheat, *toria*, or *senji* (Indian clover) equally well.

Cotton

515. Of the fibres, cotton (*gossypium herbaceum* vernacular *kapas*) is by far the most important. The recent failures of cotton in America have drawn the attention of Lancashire manufacturers to the importance of Empire-grown cotton, so that Indian cotton has a more than local interest and value. The area of cotton grown in the Punjab has been liable to considerable variation in the last few years owing to the great fluctuations in its price. The fluctuations in recent years are shewn in the accompanying graph (*fig.* 24).

Conditions suitable for growth of cotton.

516. Excepting the montane and submontane areas cotton is grown wherever irrigation is possible and the land not excessively sandy. In the Punjab cotton is almost exclusively an irrigated crop. Four-fifths of the crop is normally irrigated, and it is only in the extreme south-east of the Province that a moderate yield is sometimes obtained without irrigation. The season in the Punjab is much shorter than in other provinces on account of the cold winter, and unless

the crop is grown early by means of irrigation water, it can never yield well. The best yields are obtained in the south-east districts (Karnal, Rohtak, etc.) and in the western canal colonies. Cotton does not succeed on very sandy soil, but it can be grown on any class of soil, excepting only the very lightest. It is a crop which gives a good return for manuring, or rather if grown on manured land. For the cotton is very seldom manured directly, but is often grown on land which has received a heavy dressing of farmyard manure for some previous crop.

Cotton yield and consumption.

517. The average yield for the Province may be taken as five maunds of *kapas* or seed cotton per acre, which, when ginned, will yield about one-third of lint or fibre and two-thirds of seed. So that the total yield on the pre-war average area may be taken as being about 7,500,000 maunds of *kapas* or 2,500,000 maunds of lint (equivalent to 500,000 Indian bales of 400 lbs each). And it may be expected that in the future the average total crop may be about 10,000,000 maunds of *kapas* equivalent to more than 650,000 bales of lint. It must be remembered that the whole of this amount does not reach the ginning factories, for the total amount kept for ginning and spinning by hand in the villages is very large, though it tends to decrease. The average so used is estimated at 450 or 500 thousand maunds of cleaned lint corresponding to 100,000 bales; but the amount withheld from the general market varies very greatly from year to year according to the fluctuations in the prices of cotton and also of piece-goods. The yield of lint per acre in various parts of the world on the average from 1913-14 to 1918-19 as given in the Indian Cotton Committee's Report, page 171, is as follows :—America 185 lbs., India 80 lbs., Egypt 365 lbs., Punjab 130 lbs. It may be taken that in the Canal Colonies the yield generally averages $6\frac{1}{2}$ maunds of seed cotton or 170 lbs. of lint per acre.

Desi and American cotton : American 4-F. cotton.

518. There are two main classes of cotton in this Province : the *desi* (country), which is itself a mixture of varieties, and American, which is a comparatively recent introduction. These varieties are very different in appearance, the American being a bushy plant, whilst the Indian cotton plant is tall and slender. One of the most striking achievements of the Punjab Agricultural Department since its inception

has been the introduction of an apparently acclimatized variety of American cotton denominated 4-F. From its use in a negligible area in 1913, it became increasingly popular in the Canal Colonies, till in 1921-22 it formed no less than 54 per cent. of the cotton on all the colony canals, whilst in that year in the Lower Bari Doab no less than 13 acres out of 14 sown were Punjab American. It covered a maximum area of seven hundred thousand acres in 1920-21. Meanwhile the area under *desi* (indigenous) cotton was also undergoing an expansion in a smaller degree, consequent on the great rise in cotton prices during the years 1917-18 to 1920-21. The area under *desi* cottons in the colonies reached its maximum in 1919-20, when no less than one million acres were under these types, commonly classed together under the trade designation of Scinde-Punjab cottons. But in the years 1921, 1922, the area under both 4-F. and *desi* cottons markedly decreased, once more in sympathy with the drop in cotton prices (*fig.* 24). Moreover, during the five years (1917—22) the outturn per acre of unginned 4-F. cotton has shewn a general decline. There is evidence that the 1919-20 and subsequent crops have undergone deterioration of quality in fibre. This diminution in yield and quality may be due to progressive deterioration due to the resurgence of impure dominant characteristics; or it may be due to want of water in the critical months of September and October. The question is an interesting one both from a scientific and a practical point of view.

Garden produce.

519. Highly manured land near villages grows turnips, carrots, and similar produce. Potatoes, already a valuable crop in the Kangra and Simla Hills and the suburbs of large towns like Sialkot, are increasing in importance. Mangoes are a fruit-crop in Hoshiarpur, Jullundur, Multan and Muzaffargarh; and in the two latter districts and in Dera Ghazi Khan the date-palm flourishes. There is some export of pears, apples, and other European fruit from the Kulu valley, but inaccessibility hinders the development of the industry. In the development of intensive agriculture of this type lies hope for the future of agriculture in the small holdings which abound in the congested districts of the Central Punjab. The large towns in the neighbourhood provide a convenient market. But intensive agriculture will only

be prosperous in the hills when communications are sufficiently developed to allow of the produce being marketed at remunerative rates.

Price fluctuations.

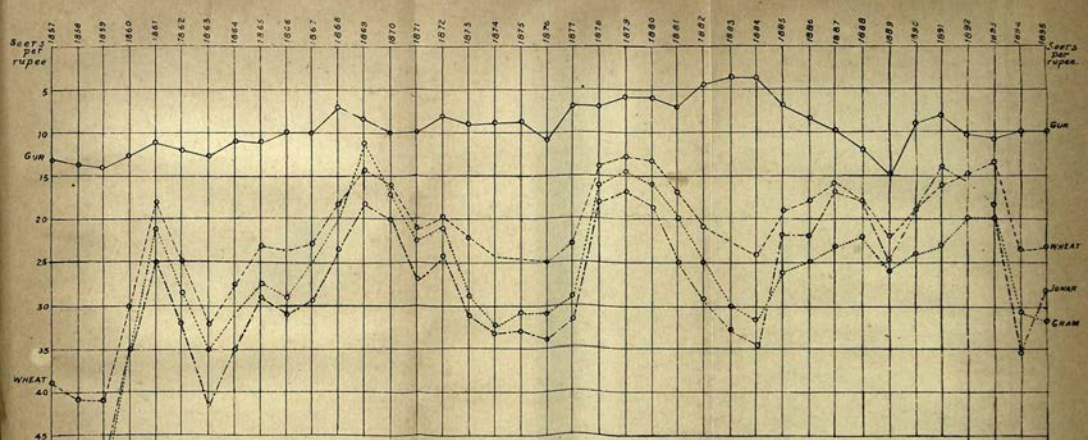
520. Some idea of the fluctuations in prices during the last sixty years may be obtained from the graph (*figs.* 25, 26). The values are only approximate averages; but they are sufficient to shew (1) the effect of developed communications in bringing India into the world market for wheat and so steadying the price of wheat, and to a less extent that of other food-grains ; (2) the steady rise in prices during the last fifteen years, accentuated during the Great War.

The Agricultural Department.

521. The Agricultural Department was properly organized in 1906 and with the inauguration of the Reforms Scheme in 1921 it has become a " Transferred " Department under the charge of a Minister. The present functions of the Department may be divided into three main heads :—(1) Education, (2) Research and investigation, and (3) Demonstration and propaganda.

The Agricultural College at Lyallpur.

522. The Punjab Agricultural College, Lyallpur, was opened in September 1909. Its main object is to give such a training in scientific Agriculture as will render the men educated at it competent to further the progress of Agriculture in the Province generally on the most approved and modern lines. Till 1915 the future of the college seemed doubtful; but the tide turned and for some years now the Principal of the college has had to refuse many applications for admission. Since 1917 the institution has been affiliated to the Punjab University. There are the following courses :—(1) a four years' University course in English ; (2) a two years' Certificate course in English ; (3) a six months' Vernacular course in practical farming; (4) a one-year course for certificated Vernacular Middle school teachers to enable them to teach agriculture in those schools ; (5) a short course in rural economy for newly joined Assistant Commissioners, Extra Assistant Commissioners, Canal Subordinates and Co-operative staff. In addition to its function as an educational institution, the college serves as a centre for agricultural research and has the best equipped Chemical, Botanical and Entomological laboratories and scientific library in the Province.



PRICE FLUCTUATIONS, 1857—1922.

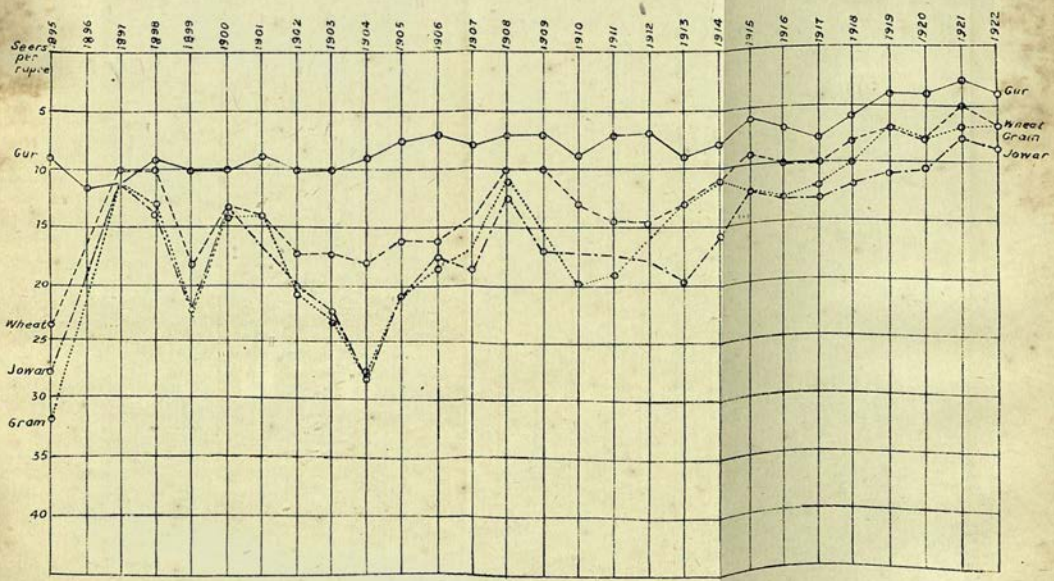
(PART I, 1857—1895)

From the year 1886 the prices are average prices of Amritsar, the principal grain market of the province.

NOTE. 1. Rise in prices from 1903 onward accentuated during Great War.

2. Large fluctuations in prices of food-grains, before communications developed.

3. These fluctuations are accentuated in the case of grain and still more of jowar, which have only local markets, as compared with wheat, which has a world market.



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Research and Investigation.

523. There are experimental farms at Lyallpur, Gurdaspur, Hansi and Sargodha. The object of these farms is to carry out experiments with different varieties of crops in order to ascertain their suitability to particular tracts, to see the effects of cultivation, irrigation and manuring, and to test the relative usefulness of different types of agricultural implements. They also serve as demonstration centres for *zamindars*, who frequently visit them. Much has been done as regards cultural improvements, generally with the object of greater conservation of soil moisture: but special mention must be made of the methods of sowing maize, and cotton in lines, which the department advocates. The areas of maize and cotton now sown by these methods have been greatly extended. Useful work has also been done in introducing Basra date-palms in the Province. In 1910 about 3,500 Basra date trees were planted in the districts of Muzaffargarh, Multan and Dera Ghazi Khan. The results were very good. So keen became the demand for these trees that the Department imported from Mesopotamia in 1921 some 6,000 fresh suckers. Experiments have also been made with new varieties of Scotch potatoes in the Simla hills. These potatoes yield from 50 per cent. to 75 per cent. more than country potatoes in that neighbourhood, and they are rapidly replacing the latter.

Agricultural Chemistry.

524. A successful reclamation experiment on land affected with salt was carried out in the Lyallpur district. It took about three years, and cost about Rs. 30 per acre *plus* an undetermined charge for extra water. Another experiment on a much larger scale is being made on the *bara* (inferior) lands in Montgomery district, where a special experimental station has been opened for the purpose.

Entomology.

525. Sericulture has been greatly extended. It is practised as a cottage industry by small *zamindars* and teachers of rural schools in submontane districts. With an expenditure of Rs. 5 a rearer gets a return of 40 rupees, after 4 months, at the cost of little labour to himself and his family. The study of the life history of various pests such as the cotton bollworm, mango-hopper, and *psylla* on citrus trees, has enabled means to be devised to combat them. It is difficult to

estimate accurately the money value of such work to the Province as there is no limit to the destructive activities of these pests, if they are not kept under control.

Agricultural Engineering improved implements; and tubewells.

526. The recent high price of labour has emphasised the value of labour-saving implements. No longer need the Punjabi *zamindar* plough after the manner of the patriarchs. Research work has been done by the Agricultural Engineer in consultation with the Professor of Agriculture and several improved types of agricultural implements have been evolved. A cheap and simple "Bar harrow" designed by the Agricultural Department is in great demand especially in the canal colonies. The "Meston" and "Raja" iron ploughs being imported from England are more expensive, but they are very popular with those who can afford them. A number of tube wells have been installed in the Province for irrigation of lands not commanded by canal irrigation. But progress has in recent years been much hindered by the abnormal rise in the prices of material. These considerations do not so much apply to well-boring operations, which are carried out by the Department and are designed to increase the supply of water in existing wells.

Demonstration and Propaganda work is conducted by means of (1) eight Demonstration farms and numerous plots established at various places throughout the Province; (2) demonstrations of implements, and of other exhibits at fairs ; (3) the loan of improved implements to selected cultivators ; (4) distribution of printed departmental leaflets; (5) sale of seeds from departmental seed depôts and other local agencies controlled by the Department.

Co-operation : and rural indebtedness.

527. But man cannot live by bread alone; science will not cure all the ills of the life. A change of heart is also necessary; and this Co-operation endeavours to bring about. Co-operation first developed in India as the best way of dealing with the problems of rural finance. The difficulties caused by the problems of rural indebtedness had repeatedly called for and had secured the closest attention as periods of scarcity and distress succeeded one another. The efforts made to cope with the problem were enormous. Famine Relief,

Irrigation Works, Railways, Acts for the relief of agriculturists, for advancing capital, and for saving them from expropriation all testify to the solicitude of Government. But in Co-operation alone was a satisfactory solution of the problem found.

Definition of Co-operation.

528. Given in any area a common need, a realisation of this need and a willingness to seek for it by joint action, the only method of setting to work that holds out any promise of success is that known as Co-operation. Co-operation is an organisation or method of doing business. It is not really anything more than a form, a skeleton framework on to which those in need can build to their desire. But there are many to whom it means more than this, for it so happens that the essentials to success are largely elements of character of high value. The fact that human beings meet together on equal terms to combine for the satisfaction of a common need affords opportunity for the development of an unselfish spirit which leads to higher things than material advantage, so that, to many, co-operation is a faith. This does not mean that it is essentially anything more than a serious business undertaking, but it possesses the peculiar feature that it brings solid gains to those who are unselfish enough to work for the good of all, themselves included. Expressed bluntly, it returns a cash value for honesty and other virtues, and so undoubtedly exerts a strong influence in favour of the growth of those virtues. Far from getting the better of his fellow members, the object of each is to help the others, in the firm belief that, as they will in turn help him, his need will the more certainly be satisfied. It is a mistake to lay too strong stress on the moral aspect of the movement in its early stages ; this will inevitably develop later as success in the economic sphere is attained. It must be remembered that Co-operation is a form of organization. Experience seems to show that it is the only system of voluntary organization suitable for poor people. Co-operation then is a form of organization, wherein persons voluntarily associate together as human beings, on a basis of equality, for the promotion of the economic interests of themselves.

The Co-operative spirit.

529. But Co-operation is something more than a system. It is a spirit, an attitude of heart and mind, never more needed than it is to-

day. "The conquests of the secrets of nature," says a recent writer speaking of the present condition of the world, "is child's play in comparison with the overcoming of the difficulties of human co-operation." Yet, as in the hour of need men turn instinctively to religion, so now in the hour of economic need men are turning more nad more to Co-operation, for Co-operation is religion applied to business. It is not that business is immoral, but that the Capitalist or profit-seeking system which prevails is dominated by the fundamental law of its being, that the maximum profit and nothing but the maximum profit must be earned. No system has ever been more efficient for production or more unequal for distribution. By its very nature it is unable to protect the weak against the strong, the many against the few or the community against the inevitable strife of Labour and Capital. On the other hand it is of the very essence of Co-operation to strengthen the weak, protect the community and give fair play to all. Great the task, but fair the prize. To gain it one thing is indispensable. Societies innumerable may be founded, vast enterprises may be undertaken, but if the Co-operative spirit is lacking, ultimately all will be "as sounding brass or a tinkling cymbal."

Co-operation: Early societies.

530. The appearance of the Co-operative movement in the Punjab may be said to date from 1898, when Mr. (now Sir Edward) Maclagan and the late Captain Crosthwaite started a few societies in the present districts of Multan and Mianwali. In default of any special law, these were registered under the Companies Act in Calcutta. A few have survived, and, reconstituted according to the teachings of experience, are still rendering useful service to their members.

Co-operative Societies Act of 1904.

531. On the passing of the Co-operative Societies Act in 1904, a full-time Registrar was appointed and efforts were made to discover the system best suited to the peculiar conditions of the Punjab. Progress, as was only to be expected, was at first slow; in 1905 there were only 12 societies, in 1906 the number had increased to 24 ; and it was not till 1911 that the number reached one thousand. In more recent years, steady continuous propaganda has led to a rapid spread of the movement.

Adoption of the share system in the Punjab.

532. The original Act was only intended to meet the needs of credit banks, the Raiffeisen model being clearly in the minds of the framers. In the Punjab, the pure Raiffeisen type the ideal of Co-operative purists, has been departed from to the extent that a considerable portion of the funds needed by members are contributed by them in the form of small shares paid up, by instalments, in the course of ten years. During this period all profits are indivisible. At the end of ten years the Local Government rules allow the societies to decide upon alternative courses. If the members so desire, the shares may be returned and the profits voted indivisible for ever. In this case, the society becomes pure Raiffeisen in type. Or the shares may be retained and three-fourths of the profits distributed as permanent capital in proportion to the shares held. In succeeding years, three-fourths of the annual profits may be divided amongst the members in proportion to shares held. This is a concession to weakness, that is protected by an order fixing a low maximum to the dividend. The result of the share system and indivisible profits is that after ten years most societies are nearly, if not quite, self-supporting in the matter of funds. In 1922 the members owned Rs. 52 lakhs as share capital, and Rs. 11 lakhs more as indivisible profits in their societies, so that it is only a matter of time before all villages possess a common fund from which all the legitimate needs of their members may be met. The drain of interest will no longer be felt. All profits resulting from the business will remain in the village and the benefits of thrift will be obvious to everyone.

Act of 1912: Foundation of Central Banks.

533. The original Act did not provide for secondary financing institutions, but the first Central Co-operative Bank was opened at Jullundur in 1909, and in 1910 there was started at Madar the first Banking Union of the type which has now become so popular. The Act of 1912 legalised the position of these institutions, and there were in 1922, 37 Central Banks and 69 Credit Unions with a working capital of Rs. 164 lakhs. These central financing bodies have advanced loans amounting, in the aggregate for the last ten years, to over two crores. Practically all this has been lent to primary societies which in turn have advanced in the same ten years nearly $4\frac{1}{2}$ crores to their members. What has been the

gain in interest from these transactions can not be estimated with any accuracy; but it cannot be less than ten lakhs in a single year now ; while of the interest paid by the borrower over nine lakhs is annually added to their reserve. The gain in cash benefits in a single year may be reasonably estimated at 20 lakhs of rupees.

534. A general idea of the progress made may be gain-
Progress made. ed from the following figures :—

	Number of Societies	Number of members.	Working Capital Rs. (lakhs).
		(Thousands).	
1910	706	39	16
1915	3,297	156	1 38
1920	7,094	198	1,78

Besides benefits which can be measured by figures there are many advantages which are less easily demonstrable. Old debt is being paid off, lands are being redeemed from mortgage, assets are increasing ; the spirit of self-help is being encouraged with marked results. *Zamindars* are learning to manage their own affairs and to aim at educational facilities, a better standard of living, and improvements in agricultural method. They listen attentively to proposals for the adoption of remedies for the prevailing poverty. A scheme for the consolidation of scattered holdings is being received with much interest and is finding acceptance (*para.* 235). Cattle insurance is being introduced. The supply of improved agricultural implements and of household necessaries is being undertaken. Schemes for the reclamation of waste lands are being considered and the management of small inundation canals is being facilitated by the formation of silt clearance societies. Recently the desire for education has taken practical shape in the opening of several night schools for adults. The problem of agricultural marketing is being tackled and the Lyallpur Commission Shops (*para.* 495) mark a development in the direction of eliminating excessive middleman's profits and supplying agricultural produce at a reasonable price both to producer and consumer.

CO-OPERATION.

AGRICULTURAL SOCIETIES.

WORKING CAPITAL.

Note.— Stationary during the war, but rapidly increased subsequently.

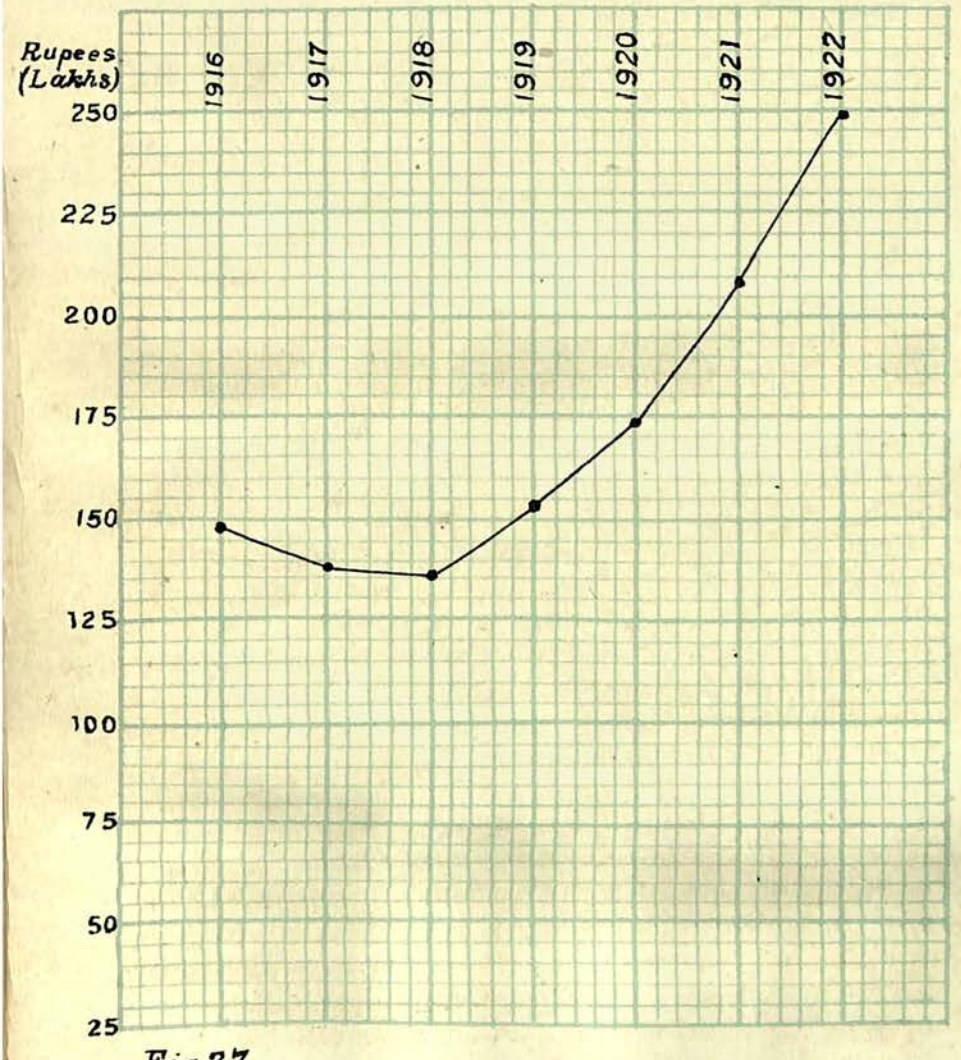

Fig 27.

CO-OPERATION.

GROWTH OF THRIFT.

SHOWING SHARE CAPITAL, RESERVE AND DEPOSITS IN AGRICULTURAL SOCIETIES FROM 1916-22.

Note.—1 Deposits declined in 1918 at crisis of the Great War owing to counter-attraction of war loan, but have since recovered.

2, Steady growth of Reserve Fund

3, Share capital has remained fairly stationary owing to repayments after 10 years

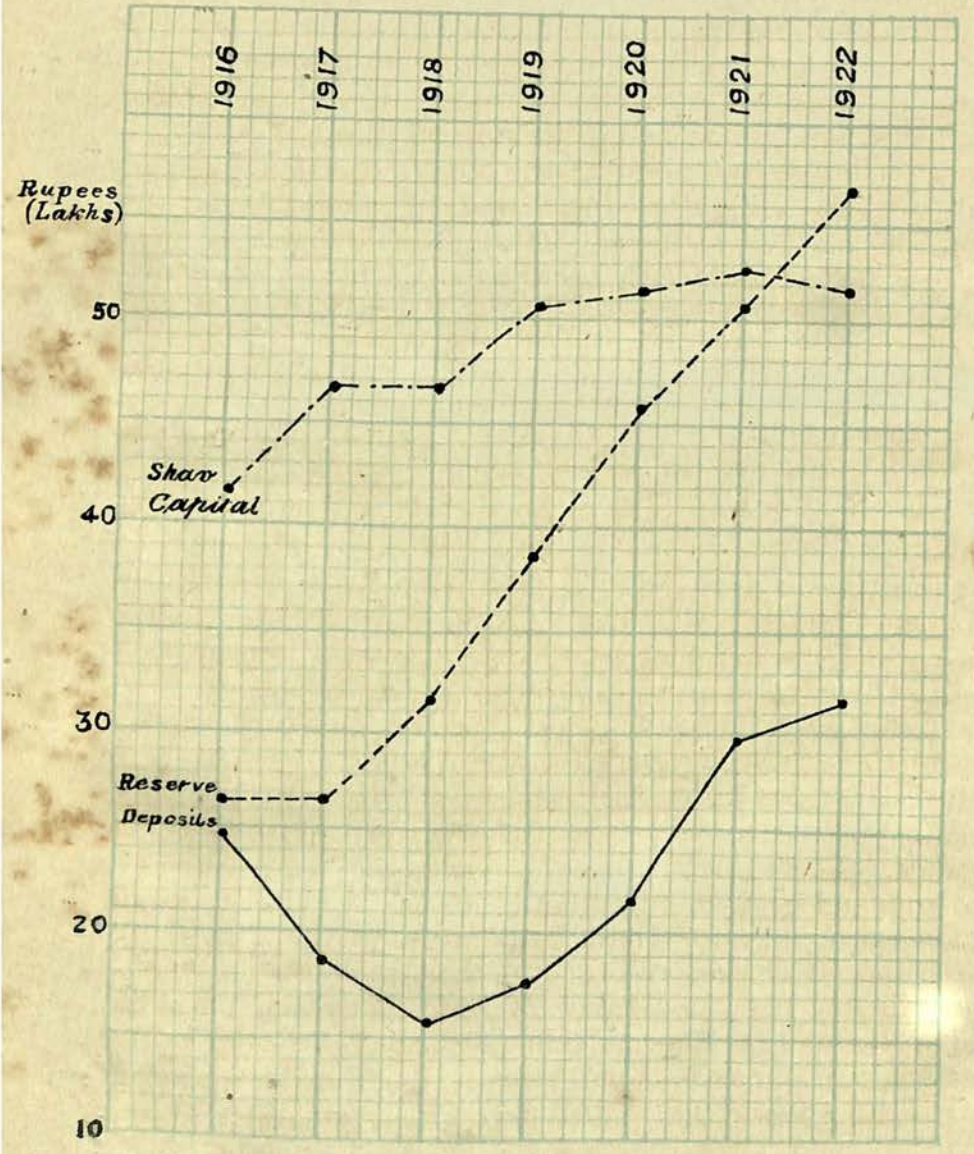

Fig 28.

Co-operation and Thrift.

535. It is, however, by preaching thrift that the Co-operative Department is doing what is perhaps its most valuable work. It is no longer considered efficient that agriculturists should deal with Co-operative Societies instead of the money-lender. They are being urged gradually to build up their own capital. How far this is being done may be seen from the accompanying graphs (*figs.* 27, 28) giving statistics for Agricultural Societies in recent years. Share capital has remained fairly constant owing to the repayments made in their tenth year in societies with returnable shares. The claims of the various war-loans led to a decline in deposits during the war, which has been more than recovered since. These deposits are all made by rural folk (either *zamindars* or sympathetic non-agriculturists) and are a gratifying tribute to the spread of the idea of thrift. The fact that working capital is increasing in an even greater proportion is due to the spread of the movement to new areas, which have not yet been able to make accumulations.

The Co-operative Department and Rural Economics.

536. Questions of a mathematical or scientific nature are dealt with by the Agricultural Department. The broader question of the application of economics to agriculture is being tackled by the Co-operative Department as effectively as is consistent with the limited means at its disposal. It has collected a Library on Rural Economics which will compare favourably with any in the world; and the experience of other countries is drawn on to assist in solving Punjab problems. The subject is vast. The means at hand are hopelessly ineffective for the greatness of the problems to be tackled. Yet good work is done in investigations which will make clear to a less financially handicapped generation the lines on which progress is feasible. The valuable investigations made by Messrs. Darling and Strickland into the lessons which European Co-operation has for India generally and the Punjab in particular, have been recorded by them in works of permanent value. The appearance of Mr. Calvert's "Wealth and Welfare of the Punjab" is a sufficient testimony to the research work that is being done by the Punjab in Rural Economics ; work that called forth the encomiums of the

members of the Indian Economic Association at its sixth Conference at Lahore in 1923. The problems investigated are both interesting and instructive.

Pre-British Rural Economy: Land valueless.

537. Under former rulers the revenue necessary to support them and their large armies and numerous courtiers was collected in kind and was only limited by the cultivator's ability to pay; and the authorities were always ready to eject him in order to install anyone who would pay more revenue. Anything which a man produced in excess of his requirements was taken from him in the form of revenue, whilst, even had he been able to keep a surplus from the revenue collector, the absence of communications and markets prevented him from profiting by its sale. In these conditions there could be no rent over and above the revenue, and land possessed no capital value. The village was in every respect self-supporting; it had its own carpenter, blacksmith, potter, weaver and other artisans, all of whom rendered services to the agriculturists for which they were paid by shares of the harvested grain; petty shopkeepers existed in every village and were mainly paid in kind. Cash was practically unknown to the cultivator; the only form of capital he could produce was sunk in jewellery which was generally concealed on account of the insecurity of the times. As a result of these conditions no members of the rural community possessed fluid capital; land had no value both because there was no one to purchase it and because there were no excess profits to be made from it; sales of land were practically unknown before the advent of British rule.

British occupation: Land has a commercial value.

538. The immediate result of the British occupation was to introduce security of tenure and a greatly reduced revenue. The reduction immediately created a surplus, and, with the growth of communications, markets came into existence and this surplus became saleable. This encouraged extension of cultivation, the more so because the land revenue was fixed for long periods and during their continuance no extra revenue was demanded on account of new cultivation. As cultivation was extended and the surplus for sale became larger and larger a very

large export trade was slowly established. In old days, there being no surplus even in normal years, the failure of the monsoon rendered famines inevitable; at the present day irrigation renders the results of a bad monsoon less disastrous whilst the deficit in produce does not lead to famine so much as to reduction of export. The normal export provides a margin up to which produce may be decreased without stinting the Province. Export also tends to prevent violent fluctuations in price as, unless the produce of any year is insufficient to meet provincial requirements, prices will be governed by world prices and will not vary so readily as a result of local seasonal conditions. All these facts have led to an amazing increase in the productivity of the land and the prosperity of the people. The creation of an agricultural surplus led to the possibility of rent and with its advent arose the new relation of land-owner and tenant, the former being able to live without expenditure of his own energy and resources; land immediately gained a commercial value and sales and mortgage became common.

Recent inflation in land values excessive.

539. The whole course of British Rule has been marked by rapidly increasing land value. Up to about twenty years ago the land values were only such as were warranted by the increase in production and prices, but there is little doubt that during the last twenty years they have been more than economic. This is mainly due to speculation in land, encouraged by the steadily rising prices, which has been rendered possible by the fact that cultivators have no means of investing capital except in land or jewellery. With them spare cash has generally gone in unproductive expenditure or in land purchase; and the fact that purchase of land may not return interest on their money is no bar to such purchase. Continued sub-division of holdings encourages sale. The scattered nature of holdings may render one plot far more desirable to a neighbour than to its owner whilst the small size of the plots renders their purchase well within the credit of the villages. The absence of industries and opportunities for investment and the lack of economic knowledge allow small owners to purchase land at more than its economic value. As a result sales and mortgages are still excessive in number and extent though they may not prejudice the agricultural community as a whole.

Resulting indebtedness of the agricultural classes.

540. The increasing prosperity of the people and increase in land values has been accompanied by a great increase in indebtedness. Directly the British occupied the country the revenue, though reduced, was made payable in cash and was fixed irrespective of seasonal variations (in former days the revenue though excessive had perforce been limited by the produce available). At the same time the British paid the army and the large number of labourers employed on public works in cash. The cultivator, who had no experience of cash transactions, was suddenly asked for regular payments in cash; and at the same time other classes of the community became possessed of cash which they spent in the new markets, thus creating a cash capital which drifted to the local shopkeepers and money-lenders. The conditions necessary to the growth of borrowing were brought into operation—the cultivator needed cash and possessed a valuable commodity in his land on which he was able to raise credit, and the local shopkeeper had amassed a cash balance and was in a position of power when dealing with the cultivator who had no knowledge of cash values. The cultivator in spite of his increased prosperity immediately began to borrow from the money-lenders In the early days of this movement, when land values were still small, the money-lender advanced money against the coming crop. As communications and markets were yet in their infancy, the price of the future crop was entirely dependent on the season and hence the money-lender's business was risky; on this account he was entitled to, and did, charge very high rates of interest. As land value increased, and as the money-lender found that the new courts of law would enforce his claims, he began to advance money against the land rather than against crops, and in doing so did not reduce his traditionally high rates of interest.

Attempted remedies: The Land Alienation Act.

541. The growing impoverishment and financial subjection of the agricultural classes caused great anxiety to Government as far back as 1872; many remedies were tried, amongst them the introduction of elastic systems of revenue varying with the nature of the season, and the advance of Government loans to agriculturists. All these proved insufficient to stop the evil and, after much discussion, the Land Alienation Act of 1901 was introduced (*para.* 239).

Since the passing of that Act the financial position of the agricultural classes has undergone steady improvement, sales and mortgages are still extremely frequent, but the balance is in favour of the agriculturists. On the other hand the Act does not appear to have reduced the credit necessary to finance cultivation, nor has it led to a decrease in the value of land, which is still freely transferred amongst agricultural tribes. In some cases members of agricultural tribes have taken to money-lending but, even so, transfer of land to them is less harmful than to the professional money-lender for they are interested in land and realise the factors necessary to its productivity.

Inflated land values not due to improvements effected by *zamindars*, though partially due to development by Government.

542. The enormous amount of capital sunk in the purchase and mortgage of land has not been a source of benefit to the land itself; the major portion has been dissipated and the only forms of permanent improvement left by the ancestors of the present population are found in the existence of wells and of a few small embankments to prevent floods, in a certain amount of levelling and in the existence of trees which afford timber and shade. Exceptions to this may be found in the hills where the pressure on resources has led to the laborious terracing of otherwise unculturable hill-sides and, possibly, in the new Canal Colonies where a more enlightened spirit is beginning to be manifested. On the other hand Government has created improvements which affect vast areas, such, for instance, as the great canal and railway systems and the less advanced road systems. It is unfortunate that the direct financial profits which have attended the construction of canals and railways were not also available from roads, for whilst the former are well up to the requirements of the Province the latter are woefully undeveloped.

Wasteful traditional method of cultivation.

543. The ancient system of cultivation naturally was limited to the production of food and other local requirements and land was not devoted to the crops for which it was most suited. The absence of surplus did not encourage extension of cultivation and hence plenty of land was available so that each cultivator was able to raise his crops without resort to laborious intensive cultivation. The extensive system of tillage and limited nature of crops entailed work

only at certain periods of the year and produced the habit of wasting long periods in idleness ; it demanded little manuring and was accompanied by the existence of long fallows and failed to introduce any knowledge of rotational systems of agriculture. The habits of centuries cannot be changed in a short period, and though holdings are now small, they are still cultivated by the wasteful extensive method. There is an enormous difference between the results produced by the various cultivating castes, yet the difference beween the best and the worst is nothing to the difference which could be made in the best by the introduction of scientific methods and continuous labour.

Expansion of wheat acreage due to communications.

544. With the introducion of communications the cultivator found that, of his traditional crops, that which had the most easy sale was wheat; as a natural result he has concentrated his surplus production on this crop and a great export trade has grown up in it. In 1870 wheat was grown on about 5½ million acres; since then the area of the Province has been greatly reduced, yet the average area under wheat now amounts to nearly 9 million acres in British territory alone. When the British first occupied the country there was no export of wheat, but during the decade 1886-95 the export averaged 278 thousand tons, and during the last decade, in spite of artificial restrictions, the export by railway and river of wheat and wheat flour averaged over 840 thousand tons per annum.

Uneconomic results of increase in area held by tenants.

545. Whilst accurate statistics are not available, it appears to be true that the price of land has risen more than wages of labour, and that wages of labour have risen more than the price of produce, which itself has risen more than the cost of production. The non-working landlord takes a fixed share of the produce and pays the land revenue. The land revenue has represented a diminishing share of the produce and hence the landowner has been taking an increasing share in produce of increasing value and gains by the general prosperity. The tenant takes a fixed share of the produce and has to bear the cost of cultivation ; the former has been increasing more rapidly than the latter and therefore the tenant is also improving his position. The labourer is better off than before because his wages have risen more rapidly than the price of pro-

duce. All classes have benefited with the exception of the owner who cultivates through paid labourers and those who have bought land on borrowed capital. If these statements are true, it must follow that owners desire tenants and that tenants desire tenancies ; this is verified by the fact that during the last fifty years the number of tenants and the proportion of the total cultivated area which they cultivate has risen very greatly. The tenant has no security of tenure beyond that created by his scarcity value. In consequence he is not encouraged to improve the land; practically all improvements, such as the sinking of wells and planting of trees to provide timber, are carried on by owners and not by tenants. To this extent the increase in the porportion of land cultivated by tenants is an economic loss.

Necessity for constructive work in Agriculture

546. A common saying about India is that she is poor. This generalisation contains a considerable element of untruth. There is thus much misunderstanding about the poverty of India. What is meant by constructive work is the organisation of the people so as to avoid the waste that leads to poverty and so as to enable them to put their resources to more productive use. The only successful way to fight poverty in the Punjab is through Agricultural organisation. For this purpose the Rural Economics of the Punjab must be studied. No people in the world could carry the burden which the Punjab cultivator bears. His holding is small. He has been surrounded by a host of parasites attracted by the enormous wealth which the Government has poured into the country through its canals and railways. The high price of the land, due in part to the lightness of land revenue, has given the course of easy credit. It is estimated that while the land revenue is about four crores of rupees, the interest paid annually to the money lender is about 12 crores ; litigation costs about four crores; mortality amongst cattle, which can be prevented, costs another three crores and the loss from insect pest is nearly nine crores. Hence the need for reconstruction on right lines throughout. It is through Co-operation people will be organised to help themselves and to help each other with the object of replacing methods that lead to poverty by methods that lead to prosperity. The vicious system of credit which is the chief cause of poverty must be replaced

by Co-operative credit. This kind of reconstruction will free the people from the economic burdens that crush them, teach them to waste less, to produce more, to bring more intelligence to bear on their work, and use the means which science has made available.

Propaganda work.

547. Such are some of the lines on which research is proceeding in scientific agriculture and Rural Economics. As soon as reliable conclusions are arrived at, steps are taken for general propaganda. Apart from the teaching work in Lyallpur College itself (which has now added a course on Agricultural Economics to its curriculum and gives a series of popular lectures on subjects of general interest), propaganda work has been done in the districts. Cattle and religious fairs afford an opportunity for demonstrating improved agricultural machinery, and two Deputy Commissioners in the Ambala Division have personally conducted propaganda, thereby forestalling the criticisms of the agitator that Government takes no interest in the welfare of the people. But the most valuable medium for propaganda is the Co-operative Department itself. A regular course of training in Co-operation and Rural Economics is prescribed for all candidates for the Department, while yearly refresher courses are also held to prevent the staff becoming rusty, and to stimulate the fertility of thought which is provoked by discussion. Ideas ferment and are gradually spread among the people. The staff is often enabled to overcome popular hostility to measures such as those for the reafforestation of the Siwalik Range of hills which the people have misunderstood (*para.* 261).

Civil Veterinary Department: History.

548. In 1868 Lord Mayo, as Viceroy, appointed a Commission to report on cattle disease in India and the measures necessary for their prevention and cure. The report of the Commission included a recommendation for a Provincial Veterinary Establishment. In 1882 Lord Hartington, then Secretary of State, urged that the newly constituted Department of Agriculture should give early and careful attention to the subject of cattle disease. In 1883 a Committee at Calcutta recommended the formation of a Civil Veterinary Department, but want of funds prevented anything being done. In 1886 the Government of India wrote to the Secretary of State that the formation of a

Civil Veterinary Department was necessary to investigate the practices of the people in the rearing and management of livestock, and to ascertain in what respects these practices were susceptible of improvement. Finally, in 1891, the Government of India gave details of the newly formed Civil Veterinary Department, and said that, though in the first instance its primary duty was to deal with cattle disease, in future horse-breeding duties would be paramount. In 1903 the Government of India transferred the entire control of horse, mule and donkey breeding in fifteen selected districts of the Punjab to the Army Remount Department: in these districts the work of the Civil Veterinary Department is now confined entirely to cattle.

Present functions of the Civil Veterinary Department.

549. The Civil Veterinary Department is under the general control of the Director of Agriculture. The Department was re-organised in 1903 on the recommendation of the Horse and Mule Breeding Committee, and its work now falls under four heads:— (1) Cattle breeding; (2) Horse, Mule and Donkey breeding (in the districts of Rawalpindi, Attock, Jhelum, Gujrat, Gujranwala, Jhang, Lyallpur, Lahore, Amritsar, Montgomery, Sheikhupura, Ferozepore, Multan, Dera Ghazi Khan and Shahpur, the Army Remount Department has entire control of breeding operations, and is also the advisory authority in all matters connected with breeding from District Board stallions); (3) Cattle disease; (4) Veterinary instruction.

Distribution of work.

550. The Province is divided into 3 circles, each under the charge of an Imperial officer as shown below:—(1) Central Punjab under the Chief Superintendent, Civil Veterinary Department; (2) South Punjab, and (3) North Punjab, under Superintendents. In addition to the work of his own circle the Chief Superintendent, Civil Veterinary Department, controls the work of the other circles and inspects occasionally the Government Cattle Farm, Hissar, which is under the immediate charge of an Imperial officer. The Superintendent of the North Punjab is also the Superintendent of the North-West Frontier Province. Each Superintendent has a Deputy Superintendent and a staff of Veterinary Inspectors and Veterinary Assistants. There are now 162 Veterinary hospitals and dispensaries in the Province. The

number of animals treated is yearly increasing in numbers, and a gratifying indication of the way the Department is winning each year the confidence of the public is shown by the number of offers received from private individuals to establish Veterinary Hospitals at their own expense.

Cattle breeding: The Hissar Cattle Farm.

551. The Hissar Cattle Farm has a total area of about 40,000 acres, of which about 2,000 acres are under cultivation. This farm was handed over to the Punjab Government by the Government of India in 1912. It is under the charge of a Superintendent with an Assistant Superintendent (Imperial officer). Its principal function is to provide bulls for breeding in the Province. In 1920, about 1,400 bulls were at work in the Province and about 1,200 of these had been sent out from Hissar Cattle Farm. This farm also provides bullocks and mules to the Military Department. Besides this, there are 6 cattle-breeding grants run by private individuals in the Province. A beginning has also been made recently in providing bulls of the Dhanni breed, an important matter in the North-Western districts.

The Punjab Veterinary College.

552. The Punjab Veterinary College at Lahore was established in 1882 for the instruction of Indians—Civil and Military—in Veterinary Medicine and Surgery. It is very well equipped and has proved a great success. It turns out annually a large number of trained Veterinary Assistants. The medium of instruction in the course of study at the College has recently been changed from Urdu to English and now extends to four years instead of three.

Livestock statistics.

553. In an Agricultural province like the Punjab the mainstay of the *zamindar* is his livestock. The latest cattle census held in 1919 gives the following figures for the 29 districts of the Punjab: bulls 12,000, bullocks 4 million, cows $2\frac{3}{4}$ million, young stock calves 3 million, male buffaloes $\frac{1}{2}$ million, cow buffaloes $2\frac{1}{2}$ million, young stock (buffalo calves) $1\frac{3}{4}$ million, sheep 4 million, goats 3 million, horses 100,000, mares 200,000, young stock (colts, fillies) 60,000, mules 30,000, donkeys 600,000, camels 200,000. This reveals a considerable diminution amounting to 1·9 million in the number of cattle in the Province since 1914. Various reasons have been ascribed for this decrease, but there seems little doubt that the main causes are epidemics of diseases and fodder famines

to which are attributable the very heavy mortality amongst livestock in this country ; and also economic causes leading to a decrease in the number of cattle kept for breeding purposes.

Activities of the Department.

554. The Civil Veterinary Department of the Punjab has done all in its power to check the spread of contagious disease and thus saved *zamindars* from loss of wealth, but it is greatly handicapped by want of suitable legislation to control the movements of diseased animals. People are now alive to the advantages of having good cattle and there are at present about 1,500 bulls at stud in the Province issued from the Government Cattle Farm, Hissar (all of which are specially selected animals with known pedigrees), compared with 637 in 1914. In anticipation of a large demand for stud bulls to satisfy the requirements of the Province, three additional farms for the breeding of Hissar cattle under the supervision of the Civil Veterinary Department have been started in the Lower Bari Doab Colony. These farms are in the hands of private owners. Special efforts are being made to encourage the famous Dhanni or Awankari breed in the Dhanni tract, which comprises parts of Attock, Jhelum and Rawalpindi districts. With a view to preserving this breed, a Dhanni Cattle-breeding scheme has been started. Likewise in the Hariana tract, which comprises the districts of Hissar, Rohtak and Gurgaon, steps are being taken to revive what is popularly known as the Hariana breed. For the improvement of the milking breeds in the Province, three cattle-breeding farms, run by private people and under the control of the Civil Veterinary Department, have been established in the Lower Bari Doab Colony. Merino rams are being used with success to improve the wool of the country stock. Cross-bred Merino-country rams and ewes are bred at the cattle farm at Hissar. Facilities are given to breeders to secure higher prices for their improved wools.

Veterinary Research problems.

555. Cattle-breeding has received a serious set-back owing to the difficulty of retaining suitable experts. The whole question of cattle mortality, however, is receiving attention. The total population of bovines and equines together in the Punjab amounts to some 15½ millions, and the deaths among them must amount to not less than 1½ million

annually. As the reported causes of death annually account for under 40 thousand, it is clear that we know very little of the real causes of cattle mortality. It seems probable that the cattle population is too large for the amount of fodder available, and that a large number die of weakness. Under such conditions good milking and draught strains are eliminated, and a famine-resisting breed is developed. The question is one of intense interest for the Province, as even the urban population is beginning to feel the diminution in the milk supply. The work of Mr. Cross, the Camel Specialist, is an example of what can be done by science in dealing with practical problems. His investigation of the camel disease, *surra*, and the larvæ which work their way out from beneath through the skins of goats and cattle, and finally his discovery of a new species of fly responsible for the maggot in goats (appropriately designated *Hypoderma crossii*) mark a distinct step forward in Veterinary Science.

The Army Remount Department

556. As already indicated (*para.* 548), the responsibility for certain veterinary work has been undertaken by the Army Remount Department. The present arrangements for horse, mule and donkey breeding are the outcome of the recommendations of the Horse and Mule Breeding Commission, which submitted its report in July 1901. Briefly the Commission found that under the direction of the Civil Veterinary Department Government funds were being wasted, in that efforts were being made to improve the breed of horses and mules in districts where no hope of success could be entertained, and that in some cases a type of horse was being evolved unsuitable for the needs of the Army, in whose interests primarily the funds were voted. As a result the sphere of Government operations was confined to the thirteen selected districts of Rawalpindi, Attock, Jhelum, Gujrat, Shahpur, Jhang, Lyallpur, Gujranwala, Lahore, Multan, Dera Ghazi Khan, Amritsar and Ferozepore, and since May 1st, 1903, the control of operations connected with horse, mule and donkey breeding, whether with Imperial or district board stallions, has been transferred to the Army Remount Department. The sphere of operations has since been increased to include the area of the Lower Bari Doab Colony which is being allotted to colonists on horse-breeding conditions. District board and private horse-breeding elsewhere is looked after by the

Civil Veterinary Department as before, but in the selected districts it was obviously necessary to place all operations under one authority. With the exception of the Government Donkey Stud at Mona, and the establishment at the Government Farm in Hissar, the breeding is in the hands of private persons, the service of both Imperial and district board stallions being given free for approved mares. Indian Cavalry regiments have recently surrendered the land they held for the purpose of producing remounts, as the remounting of all these units has now been taken over by the Remount Department.

Administration of the Remount Department.

557. The department is a branch of the Quartermaster-General's Department, and as such under the control of the Commander-in-Chief. The administrative head is the Director of Remounts. The selected horse-breeding districts of the Punjab referred to above are now divided into the following five horse-breeding areas: (1) Rawalpindi Area, comprising the Civil districts of Attock, Jhelum, Gujrat, Rawalpindi and Hazara; (2) Shahpur Area, comprising the Civil districts of Shahpur and Mianwali; (3) Amritsar Area, comprising the Civil districts of Lahore, Amritsar, Ferozepore, Gurdaspur, Kangra (including Kulu), Jullundur, and Hoshiarpur; (4) Multan Area, comprising the Civil districts of Multan, Dera Ghazi Khan, Montgomery, and Muzaffargarh; (5) Chenab Canal Area, comprising the Civil districts of Lyallpur, Gujranwala, Jhang, Sheikhupura and Sialkot. Depôts, with which, however, the provincial administration has no concern, are maintained at Mona and Sargodha, both in the Jhelum Colony. The horse-breeding areas are in the charge of a District Remount Officer, a Military Officer of the Remount Department, with whom is associated a Veterinary Officer, who is selected from the Commissioned officers of the Army Veterinary Corps, and in the important Shahpur Area by an Assistant Remount Officer, also an officer of the department. The District Remount Officer is assisted by an Indian Officer from a cavalry regiment of the Indian Army and the Veterinary Officer by a Veterinary Inspector, a trained Veterinary Surgeon of standing corresponding to that of the Indian Officer. Each area is divided into sub-divisions known in the colonies as *zails* (not coterminous with revenue *zails*), each of which is in charge of a Veterinary Assistant and in-

cludes the stables supervised by a jemadar. These jemadars are as far as possible graduates of the Punjab Veterinary College.

The Fisheries Department.

558. The Fisheries Department was created in the Punjab in October 1912. It aimed at increasing the fish supply of the rivers, streams and tanks in the Province, by preserving the present stock, giving them every facility to propagate their species, and adding to their numbers by artificial breeding. The first three years were spent in studying the habits of various kinds of indigenous fish and in acquiring knowledge of the local conditions of fishermen and the fish trade. From the data collected it became evident that some measures were necessary to save the fish from extinction. Fisheries Regulations were framed and enforced in Kangra in 1916. These have now been gradually extended to the Gurdaspur, Hoshiarpur, Jullundur, Amritsar, Ferozepore, Ludhiana and Ambala districts and the Indian States of Mandi, Suket and Kapurthala. The chief conditions imposed by the regulations are to license all fishing in Government waters, to prohibit the use of small meshed nets so as to save the immature fish and to introduce a close time during the breeding season. A very low license fee has been fixed. Sub-Inspectors have been appointed to enforce the new fisheries rules by propaganda work and to start co-operative societies among fishermen. Fish ladders have been constructed by nearly all the weirs at the headworks of canals to enable the migratory species to run up to their spawning grounds. Provision has been made for the grant of rewards for killing various fish-enemies, crocodiles, cormorants, otters, etc.

Trout hatching.

559. The effects of breeding and conservation are already appreciable. In the Kulu Valley, a few years ago, there were no edible fish save the barbel; now the Beas River and its tributaries are well stocked with brown trout. Twenty-five thousand eggs were originally introduced from Kashmir and hatched out in the department hatcheries. A few fish were kept as stock to breed from and the rest released into the river. Now from the original stock and their descendants very nearly 200,000 ova and fish are sent out into the streams of the Kulu district annually. Other schemes for breeding the better kinds of indigenous fish are now in progress in the Punjab, and a very large fish farm will soon be started

in Montgomery. These farms can however never attempt to compete with the vast natural resources of the Province, if only they are given a chance and the efforts of nature are not frustrated on every side by the lethargy and negligence of the people themselves, and the destructive contrivances of fishermen, professional and otherwise.

Development of the Fishing industry.

560. The object of the Fisheries Department is to develop fishing as an industry. Its potentialities are enormous, but they are frustrated by the unsatisfactory system which existed till recently. Under this system one contractor took the fishing lease for the whole district, and farmed out the monopoly to men of his own choice of the exclusion of the remaining fisher folk living on the riverside. This monopoly is being abolished. The middleman, however, who markets the catch of fishermen on commission, performs a useful function, and will remain. This latter class is being induced to open shops or markets in big towns where there is a constant and regular demand for fish. Legal powers are required for the enforcement of restriction on the size of the meshes of nets, close season, and other measures necessary for the preservation of fish, which are lacking in the old contract system. The licensing system which is being introduced will encourage competition while safeguarding the fish. The chief enemies of fish-preservation are not the professional fishing castes, whose interest coincides with that of the Department, but outsiders, who are not interested in the future propagation of fish, so long as their baskets are well filled for the present.

CHAPTER XVI.

FORESTS.

561. The potential value of the Punjab's forest resources is only just beginning to be realised. It lends a practical value to the interesting study of the flora of a tract ranging in altitude from a few hundred feet above sea level to a height 10,000 feet above the limit of flowering plants. The nature of the vegetation of any tract depends on rainfall and temperature, and only secondarily on soil. A desert is a tract with a dry substratum and dry air, great heat during some part of the year, and bright sunshine. The soil may be loam or sand, and as regards vegetation a sandy desert is the worst owing to the rapid drying up of the subsoil after rain. Still the flora outside the hills and the submontane tract is predominantly of the desert type, being xerophilous or drought-resisting. The adaptations which enable plants to survive in a tract deficient in moisture are of various kinds. The roots may be greatly developed to enable them to tap the subsoil moisture, the leaves may be reduced in size, converted into thorns, or entirely dispensed with, in order to check rapid evaporation, they may be covered with silky or felted hairs, a modification which produces the same result, or their internal tissue may be succulent or mucilaginous. In the plants of the Punjab plains there is no difficulty in recognising these features of a drought-resisting flora. As we ascend lofty mountains like those of the Himalaya, we pass through belts or regions of vegetation of different types. The air steadily becomes rarer and therefore colder, especially at night, and at the higher levels there is a marked reduction in the rainfall. When the alpine region, which in the Himalaya may be taken as beginning at 11,000 feet, is reached, the plants have as a rule bigger roots, shorter stems, smaller leaves, but often larger and more brilliantly coloured flowers. These are adaptations of a drought-resisting kind.

Wide range of Punjab flora

562. The affinities of the flora of the Punjab plains south of the Salt Range and the submontane tract are with the desert areas of Persia, Arabia and North Africa. This is especially the case in the west, though the spread of canal irrigation is modifying somewhat the character of the vegetation. The soil and climate are unsuited to the growth of large trees, but adapted to scrub jungle of a drought-resisting type,

Flora of the Punjab plains.

which at one time covered very large areas from the Jumna to the Jhelum. The soil on which this sparse scrub grew is a good strong loam, but the rainfall was too scanty and the water-level too deep to admit of much cultivation outside the valleys of the rivers till the labours of canal engineers carried their waters to the uplands. East of the Sutlej the Bikaner desert thrusts northwards a great wedge of sandy land which occupies a large area in Bahawalpur, Hissar, Ferozepore and Patiala. Soil of this description is free of forest growth, and the monsoon rainfall in this part of the Province is sufficient to encourage an easy, but very precarious, cultivation of autumn millets and pulses. The great Thal desert to the south of the Salt Range between the valleys of the Jhelum and the Indus has a similar soil, but the scantiness of the rainfall has confined cultivation within much narrower limits. Between the Sutlej and the Jhelum the uplands between the river valleys are known locally as *Bars*. The largest of the truly indigenous trees of the Punjab plains are the *farash* (*Tamarix articulata*) and the thorny *kikar* (*Acacia Arabica*). The latter yields excellent wood for agricultural implements, and fortunately it grows well in sour soils. Smaller thorny acacias are the *nimbar* or *raunj* (*Acacia leucophloea*) and the *khair* (*Acacia senegal*). The dwarf tamarisk, *pilchi* or *jhao* (*Tamarix dioica*), grows freely in moist sandy soils near rivers. The scrub jungle consists mostly of *jand* (*prosopis spicigera*), a near relation of the Acacias, *jal* or *van* (*Salvadora oleoides*), and the coral-flowered *karil* or leafless caper (*Capparis aphylla*). All these show their desert affinities, the *jand* by its long root and its thorns, the *jal* by its small leathery leaves, and the *karil* by the fact that it has managed to dispense with leaves altogether. The *jand* is a useful little tree, and wherever it grows the natural qualities of the soil are good. The sweetish fruit of the *jal*, known as *pilu*, is liked by the people, and in famines they will even eat the berries of the leafless caper. In the sandier tracts *ak* (*Calotropis procera*, N. O. *Asclepiadaceæ*), the *harmal* (*Peganum harmala*, N. O. *Rutaceæ*), and the colocynth gourd (*Citrullus colocynthis*, N. O. *Cucurbitaceæ*), which, owing to the size of its roots, manages to flourish in the sands of African and Indian deserts, grow abundantly. The American yellow poppy, *Argemone Mexicana*, a noxious weed, has unfortunately established itself widely in the Punjab plains.

563. Two trees of the order Leguminosæ, the *shisham* or *tali* (*Dalbergia Sissoo*) and the *siris* (*Albizzia lebbek*) are commonly planted on Punjab roads. The true home of the former is in river beds in the low hills or in ravines below the hills. But it is a favourite tree on roads and near wells throughout the Province, and deservedly so, for it yields excellent timber. The *siris* on the other hand is an untidy useless tree. The *kikar* might be planted as a roadside tree to a greater extent. Several species of figs, especially the *pipal* (*Ficus religiosa*) and *bor* or banian (*Ficus Indica*) are popular trees.

Trees of the Punjab plains.

564. On and to the north of, the Salt Range the flora is of a distinctly Mediterranean type. Poppies are as familiar in Rawalpindi as they are in England or Italy, and Hypecoum procumbens, a curious Italian plant of the same order, is found in Attock. The abundance of crucifers is also a Mediterranean feature. Eruca sativa, the oil-seed known as *taramira* or *jamian*, which sows itself freely in waste land and may be found growing even on railway tracks in the Rawalpindi division, is an Italian and Spanish weed. *Malcolmia strigosa*, which spreads a reddish carpet over the ground, and Malcolmia Africana are common crucifers near Rawalpindi. The latter is a Mediterranean species. One curious Borage, *Arnebia Griffithii*, seems to be purely Asiatic. It has five brown spots on its petals, which fade and disappear in the noonday sunshine. These are supposed to be drops of sweat which fell from Muhammad's forehead, hence the plant is called *paighambari phul* or the Prophet's flower. Among Composites Calendulas and Carthamus oxyacantha or the *pohli*, a near relation of the Carthamus which yields the saffron dye, are abundant. Both are common Mediterranean genera. Silybum Marianum, a handsome thistle with large leaves mottled with white, extends from Britain to Rawalpindi. The thorny Acacias, *A. eburnea* and *A. modesta* (vern. *phulahi*), of the low bare hills of the north-west Punjab are drought-resisting plants.

Flora of the Rawalpindi plateau.

565. In the flora of the submontane region there is a strong infusion of Indo-Malayan elements. An interesting member is the *Butea frondosa*, a small tree of the order *Leguminosæ*. It is known by several names, *dhak*,

Flora of the submontane region.

chichra, *palah* and *palas*. Putting out its large orange-red flowers in April it ushers in the hot weather. It has a wide range from Ceylon to Bengal, where it has given its name to the town Dacca and the battlefield of Plassy (Palasi). From Bengal it extends all the way to Hazara. There can be no doubt that a large part of the submontane region was once *dhak* forest. The tracts of Chachra in the north of Karnal, Dardhak, in Jullundur, and Palahi in Gujrat have taken their names from this tree. It coppices very freely, and furnishes excellent firewood and good timber for the wooden frames on which the masonry cylinders of wells are reared. It exudes a valuable gum, its flowers yield a dye, and the dry leaves are eaten by buffaloes. A tree commonly planted near wells and villages in the submontane tract is the *dhrek* (*Melia azedarach*, N. O. *Meliaceæ*), which is found as far west as Persia, and is often called by English people the Persian lilac. The *bahera* (*Terminalia belerica*, N. O. *Combretaceæ*), a much larger tree, is Indo-Malayan. Among herbs Cassias, which do not occur in Europe, are common. The curious cactus-like Euphorbia Royleana grows abundantly and is used for making hedges.

Sub-Himalayan flora.

566. A large part of the Sub-Himalayan region belongs to the Siwaliks. The climate is fairly moist and subject to less extremes of heat and cold than the regions described above. A strong infusion of Indo-Malayan types is found and a noticeable feature is the large number of flowering trees and shrubs. Beautiful flowering trees such as the *simal* or silk-cotton tree (*Bombax Malabaricum*, N. O. *Malvaceæ*), and the *amaltas* (*Cassia fistula*), all belonging to the order of Leguminosæ, are unknown in Europe, but common in the Indo-Malayan region. Other trees to be noticed are a wild pear (*Pyrus pashia*), the olive (*Olea cuspidata*), the *khair* (*Acacia catechu*) useful to tanners, the *tun* (*Cedrela toona*), whose wood is often used for furniture, the *dhaman* (*Grewia oppositifolia*, N. O. *Tiliaceæ*), and several species of fig. The most valuable products, however, of the forests of the lower hills are the *chir* or *chil* pine (*Pinus longifolia*), and a giant grass, the bamboo (*Dendrocalamus strictus*), which attains a height of from 20 to 40 feet. Shrubs which grow freely on stony hills are the *sanattha* or *mendru* (*Dodonaea viscosa*, N. O. *Sapindaceæ*), which is a valuable protection against denudation, as goats pass it by, and the *garna*, which is a species of Carissa.

Himalayan flora

567. The richest part of the temperature Himalayan flora is probably in the 7,500—10,000 zone. Above 10,000 feet sub-alpine conditions begin, and at 12,000 feet tree growth becomes very scanty and the flora is distinctly alpine. The *chir* pine so common in sub-Himalayan forests extends up to 6,500 feet. At this height and 1,000 feet lower the *ban* oak (*Quercus incana*), which is so common at Simla, abounds. It is grey on the lower side of the leaf. Where the *chil* stops, the *kail* or blue pine (*Pinus excelsa*) begins. It is after the *deodar* the most valuable product of Himalayan forests. Its zone may be taken as from 7,000 to 9,000 feet. To the same zone belong the *kelu* or *deodar* (*Cedrus Libani*), the glossy leaved *mohru* oak (*Quercus dilatata*), whose wood is used for making charcoal, and two small trees of the Heath order, *Rhododendron arborea* and *Pieris ovalifolia*. The former in April and May lightens up with its bright red flowers the sombre Simla forests. The firs *Picea morinda*, with its grey tassels, and *Abies Pindrow*, with its dark green yew-like foliage, succeed the blue pine. *Picea* may be said to range from 8,000 to 10,000 feet, and the upper limit of *Abies* is from 1,000 to 2,000 feet higher. These splendid trees are unfortunately of small commercial value. The yew, *Taxus baccata*, is found associated with them.

Rights of the State in the waste.

568. The State rights in the Punjab forests are based on ancient custom. Under Indian rule the State claimed full power of disposing of the waste, and, even where an exclusive right in the soil was not maintained, some valuable trees, *e.g.*, the *deodar* in the Himalaya, were treated as the property of the Raja. Under the tenure prevailing in the hills the soil is the Raja's, but the people have a permanent tenant right in any land brought under cultivation with his permission. In Kulu the British Government asserted its ownership of the waste. In the south-western Punjab, where the scattered hamlets had no real boundaries, ample waste was allotted to each estate, and the remainder was claimed as State property. The rights of the State vary from full ownership, unburdened with rights of user, down to a power of control exercised in the interest of the surrounding village communities. They are normally exercised through the Forest Department, though in special cases, where the areas are isolated, or

where local interests have to be specially considered, the Deputy Commissioner acts as the agent of the Government.

Classes of forest.

569. Such lands may be roughly divided into (*a*) mountain forests ; (*b*) hill forests ; (*c*) scrub and grass jungle in the plains. The first are forests of *deodar*, blue pine, fir, and oak in the Himalaya above the level of 5,000 feet. The hill forests occupy the lower spurs, the Siwaliks in Hoshiarpur, etc., and the low dry hills of the north-west. A strong growth of *chir* pine (*Pinus longifolia*) is often found in the Himalaya between 3,000 and 5,000 feet. Below 3,000 feet is scrub forest, the only really valuable product being bamboo. The hills in the north-western districts of the Punjab, when nature is allowed to have its way, are covered with low scrub including in some parts a dwarf palm (*Nannorhops Ritchieana*), useful for mat making, and with a taller, but scantier growth of *phulahi* (*Acacia modesta*) and wild olive. What remains of the scrub and grass jungle of the plains is to be found chiefly in the *Bar* tracts between the Sutlej and the Jhelum. Much of it has disappeared, or is about to disappear, with the advance of canal irrigation. Dry though the climate is, the *Bar* was in good seasons a famous grazing area. The scrub consisted mainly of *jand* (*Prosopis spicigera*), *jal* (*Salvadora oleoides*), the *kœril* (*Capparis aphylla*) and the *farash* (*Tamarix articulata*).

Devastation of forests in early times.

570. The early forest history of the Punjab is one of bounteous natural resources exhausted by the devastations of man. The evidences of early civilisation in regions such as the frontier hills or Hissar point to a vegetation which has now disappeared. Judging from the analogy of the known results of deforestation in other countries it is not unreasonable to infer that the same causes have produced the same effects in the Punjab. It is in fact only quite recently that the necessity for forest conservancy has been realised.

Sylviculture on annexation.

571. There was no Forest Department when the British took over the Punjab. In the first Administration Report of the Province it is recorded that the country was unfortunately bare of trees, timber almost unprocurable, and even fire-

wood scarce, and only to be obtained from the central wastes. The needs of the country in respect of timber and the means by which these needs might be supplied were first set forth in the Governor-General's minute of February 28th, 1851. In accordance with these instructions the Board made arrangements for the preservation and economising of the tracts of forest and brushwood already existing. They also commenced planting of fuel copses near cantonments, and groves round all public buildings and at intervals along the main lines of roads. Canal banks were lined with avenues. Privileges were offered to landholders who might plant timber, and all coppice lands were exempted from taxation. Somewhat vague instructions seem to have been issued to the local authorities in the northern districts who were made responsible for the preservation of timber "on the hill sides." An officer was appointed to "examine" certain forest tracts, and a timber-agent to the British Government was appointed in the territories of Maharaja Gulab Singh. The writer of the Administration Report of 1851 notes that "wood is indeed incidental to the Punjab, but the hilly regions, which overhang it, abound in prolific forest, which can supply the finest beams for architectural purposes; and its central plains are overgrown with brushwood, which, if economised, can furnish fuel for the whole population." The Board trusted that if due arrangements were carried out for the cheap felling and transit of the one, and for the preservation of the other, the country would not feel the want of either timber or firewood. The possibility of the exploitation of the forests as a source of State revenue was not at this time considered.

Development of a forest policy.

572. In the early days of British rule little attempt was made either to prevent wasteful destruction of forests, to promote reproduction, or to secure supplies of timber, firewood, or other forest produce for the use of future generations. It was not until 1855 that a definite forest policy was laid down by Lord Dalhousie. Further delay in giving effect to it ensued owing to the Mutiny. The early years of the Forest Department were marked by a constant struggle against various forms of opposition. The potential value of timber as State property was still unrealised. Slowly, however, wiser counsels prevailed, and the year 1880 saw the beginning of the organization,

demarcation and settlement of forest estates on a sound basis. The year 1914 may be taken as the conclusion of this preliminary stage. The war stimulated all forms of forest exploitation, and the present decade marks a new stage of development characterised by more intensive working, greater outturn and the recourse to mechanical appliances as a substitute for manual labour. These changes are giving rise to problems such as the choice between departmental working and private agency in exploitation, and the best methods of putting on the market the produce obtained. So far the general trend of development in the Province points to the division of the Forest Department into three distinct branches, the function of the first of which, the forest branch pure and simple, will be to produce and tend the forests from seed to maturity, while the second, or exploitation branch, will harvest and transport the raw forest products from forest to sale depôt or factory, and the third, or utilization branch, will deal with the output on a purely commercial basis, Government retaining the necessary control by retaining a proportion of the share capital, and holding a suitable number of seats on the Board of Directors.

Forest exploitation on commercial lines.

573. An important by-product of the Forest Department is the resin factory at Jallo. The outturn of the factory in the year 1919-20 amounted to 26,000 maunds of resin, and 71,000 gallons of turpentine, giving a cash surplus of Rs. 4 lakhs. The local product is now in a fair way to replace entirely the American article in India, and there are good prospects of establishing an important export trade with the colonies. A great advance has been made in the knowledge of the sylvicultural requirements of the more important species of timber in the Punjab: two working plans for Kulu and Rawalpindi, respectively, prescribing intensive working according to the most advanced methods in practice in continental forests are now in force; and one other is almost complete. Moreover, these plans have been devised to meet the full demands of an agricultural and forest population to an extent rarely if ever exacted from the forest estates of Europe. The improvement of mechanical means of transport and handling of timber is now realised to be a factor of primary importance in the expansion of the estates; and the establishment of two large forest depôts equipped with saw-mills, pulp mills, etc., is contemplated. The con-

struction of an aerial ropeway from Simla to Narkanda to cope with the increasing traffic along this route is under negotiation, and a tramway to deal with the large output of the irrigated plantations of Changa Manga is already under construction.

Financial development of the Forest Department.

574. The development of the Forest Department and its value as a financial asset may be gathered from a comparison of the departmental statistics for the last two decades. The gross revenue from the Punjab forests has risen from Rs. 12 lakhs in 1910-11 to Rs. 41 lakhs in 1919-20, the expenditure from Rs. 7 lakhs to Rs. 26 lakhs, and the corresponding net surplus from Rs. 4 lakhs to Rs. 15 lakhs. Forty years ago the net annual surplus of over Rs. 1½ lakhs during the previous ten years was considered highly satisfactory. It should also be remembered that the Forest Department is not a purely profit-making institution. The first claim on the forests of the Province is that of the agriculturists, and in order to enable him to carry on his vocation, the Department gave away in 1921-22, free or at low rates, no less than Rs. 30½ lakhs worth of timber, firewood, fodder, and grazing.

Organisation of the Forest Department.

575. The Forest Department is organised into three Circles, *viz.*, Eastern, Western and Utilization, and 15 territorial Divisions, one of which comprises the leased forests of Bashahr State, the only forests in the Punjab Native States directly controlled by the Local Government. All the three Circles are controlled by the Chief Conservator of Forests, Punjab, who is the Head of the Forest Department in the Province. The Divisions are in charge of Deputy or Assistant or Extra Assistant Conservators either of the Imperial or Provincial Services under the control of Conservators in charge of Circles. The total area administered by the Forest Department is 6,257 square miles in British territory and 358 square miles in Bashahr, out of which 2,325 square miles are under forest growth and 4,290 square miles are waste land. The area of Reserved Forests under the Forest Act of 1878 is 1,700 square miles, of Protected Forests 4,035 square miles, and of Unclassed State Forests 522. An area of 81 square miles of Reserved Forests is under the Military Authorities.

576. The problems facing the Forest Department at the present time deal with exploitation and utilization of forest products as much as with regeneration and conservation. At the present time the Punjab is only realizing on about ten per cent. of the value of the annual product of her forests. The amount of timber grown annually would permit her to become a large exporter of lumber with resulting benefit to her commercial position. There is a real world demand for dependable supplies of all sorts of wood products at good prices. The Punjab imports Swedish pine, box shooks, boxes and general structural lumber. Her railways are bringing in treated fir sleepers for experimental use from British Columbia and the States, while she has forests of her own rotting within forty miles of some of these same railways. Lumber is on its way from Puget Sound to Calcutta, while the Punjab hill forests burn and are wasted to a greater extent than the wasteful American lumberman ever dreamed of. Egypt imports eight millions sleepers from Canada. Why not from the Punjab? She has the forests and needs the money. Egypt asks for cedar squares from the States. The Punjab has the finest cedar in the world in her deodar forests.

The Forest Department in the future; Exploitation problems.

577. If the Punjab can afford money to pay freights on lumber across the Pacific, if she can put profits into the pockets of Swedish lumberman, she can well afford the capital needed to place her own forests on a modern commercial basis.

Profitable nature of Forest exploitation.

578. The remedy lies entirely in the hands of Punjabis acting through their Legislative Council. Committees from the Legislative Council should be shewn the work that is being done through personal inspection. Moreover, exploitation and utilisation of forest products are as much part of forestry as regeneration and management, and require as high a type of educated man as a specialist in these branches.

Education of the public; and specialist training necessary.

579. But an expert staff and a sympathetic public will only avail if means of transport are provided. The reason why forests are going to waste within thirty or forty miles of railways, while sleepers are imported from America,

Transportation development required.

lies in the fact that such forest material cannot be transported by coolies and bullocks over rough ground to the railways. Mechanical transport in the form of ships brings forest material nearly nine thousand miles. A comparatively small amount of capital invested in transport schemes would drive all foreign timber off the Punjab market, undersell them in Australia, Mesopotamia, and Egypt, and place the valuable woods of Kangra and the Simla hills on the London market at a satisfactory profit. The transport required includes the extension of railways, the improvement of waterways for timber floating, the construction of slides and flumes, the organisation and installation of mechanical road transport, the cheapening of dragging methods, and the mechanical haulage of logs to a central point, whence they may be sent on to depôts by some of the above-mentioned methods of transport.

Arboriculture.

580. Arboriculture is a special branch of forestry. Its main interest for the Punjab is in connection with the roadside trees planted and conserved by the District Boards (and to a less extent by municipalities). Arboriculture commenced when the Board of Administration, shortly after annexation, planted nearly a million trees in two districts alone. Since then the work has proceeded steadily with an energy that depended on the initiation of the local bodies concerned. In former times this connoted the Deputy Commissioner, who was the President and driving force of the District Board.

Roadside trees: (*a*) for shade, (*b*) for income.

581. Trees are planted primarily for shade; but arboriculture is becoming a source of income in submontane districts like Sialkot or Ambala, and to a less degree in Canal Colonies such as Lyallpur. Young trees there require far less supervision than in dryer districts. In such districts, moreover, there has accumulated a reserve of roadside trees, ripe for felling. Care is, however, taken to replace, and more than replace all cut trees. In order to provide trees in the inhospitable land of the Lower Bari Doab Colony, over 12,000 acres have been distributed in tree-planting grants. It is hoped in this way to provide the Colony with well-stocked avenues without the usual initial expenditure.

Trees suitable for arboriculture.

582. The first essential to successful arboriculture is the proper selection of the trees to be grown. This must be based upon a study of local conditions, such as the nature of the soil, the facilities for or absence of irrigation, the results of previous operations and observations as to what trees naturally thrive in the district. The *tun* and mango, for instance, will grow to perfection without irrigation in some parts of the submontane districts enjoying a heavy rainfall, and in a well-drained soil. They would necessarily fail without irrigation in dry districts. *Shisham* trees often die off owing to the presence of a *kankar* bed beneath the surface, whereas they attain their maximum size on sandy *sailaba* soils. The mulberry will not do without water. Even in the submontane districts of Gurdaspur and Kangra the mulberry avenues are unsatisfactory, while the tree thrives in the irrigated plantation at Changa-Manga and in damp soil along canal banks or in *sailab* tracts (*i.e.*, those kept moist by percolation from rivers or canals). *Eucalyptus rudis* will grow in *kalar* soil too bad to support any other tree commonly grown in roadside arboriculture. *Kikar* will grow in heavy rice soils.

The Lawrence Gardens, Lahore.

583. The Lawrence Gardens at Lahore are managed by an expert under the control of the Director of Agriculture. The maintenance of the public pleasure and flower gardens, the production of fruit and other trees, vegetables, flowers and seeds for sale, and the experimental cultivation of new varieties are features in the management. The land of the Lawrence Gardens is the property of Government which maintains an expert staff for their upkeep. The detailed maintenance of the gardens is, however, entrusted to a Lawrence Gardens Committee under the presidency of the Director of Agriculture. There is a Botanical Section of the Garden to which students from the Punjab University resort. There is also an excellent training class for gardeners, and it is unfortunate that local bodies prefer getting local men who are both cheaper and have more local influence to paying a higher price for an expert trained at the Gardens. Such an expert should repay his extra salary many times over in better-kept gardens and roadside trees.

CHAPTER XVII.

INDUSTRIES AND TRADE.

Cottage industries of the Punjab: possible development as a by-industries to agriculture.

584. Though the Punjab is only just beginning to embark on centralised manufacture it has always possessed cottage industries; much attention has recently been directed to the possibility of improving and encouraging these. It is a matter of general experience that manufactures tend to drive out cottage industries; the latter lack two of the three essentials—labour, capital and organisation—and are therefore at a disadvantage. These two missing essentials, capital and organisation, can be supplied by Co-operation, and in this movement lies the great hope for the success of cottage industries in this country. But in other countries where cottage industries have survived in competition with mass production it will be found that they are supplementary occupations of people engaged in other pursuits; in India they are the monopoly of particular castes and their adoption by others is largely prevented by prejudice. If the farmer and his family could be persuaded to spend their spare time in cottage industries they could largely dispense with the services of the occupational castes; much of the work of the potter, the carpenter and the weaver could be dispensed with, and the members of these occupational castes would be set free for employment in centralised industries without adding to the existing demands upon the produce of the land. The day however is yet far off when the farmer will consent to consider the matter. At present the tendency is in the reverse direction, and the artisan classes are adopting agriculture as a subsidiary occupation to their own. Factory hands employed in carpentering, machine fitting, and even weaving comprise a remarkably small portion of those who are carpenters, smiths and weavers by caste.

Handicrafts.

585. The chief handicrafts of the Province are those of the weaver, the shoemaker, the carpenter, the potter, and the worker in brass and copper. The hand-spun cotton cloth is a course strong fabric known as *khaddar* with a single warp and weft. *Susi* is a smooth cloth with coloured stripes used for women's trousers. A superior kind of checked *khes* known as *gabrun* is made at Ludhiana. The native

process of weaving is slow and the weavers are very poor, but much is being done to introduce improved methods by the Department of Industries, assisted by the Salvation Army and the Co-operative Department. Fine *lungis* or turbans of cotton with silk borders are made at Ludhiana, Multan, and elsewhere. Effective cotton printing is carried on by very primitive methods at Kot Kamalia and Lahore. Ludhiana, Sialkot and Lahore turn out cotton *daris* or rugs. Coarse woollen blankets or *lois* are woven at various places, and coloured felts or *namdas* are made at Ludhiana and Khushāb. Excellent imitations of Persian carpets are woven at Amritsar. The best of the Amritsar carpets are made of *pashm*, the fine underwool of the Tibetan sheep which is woven into *pashmina* at Nurpur in the Kangra district. This *pashmina* is also used as a material for *choghas* (dressing-gowns), etc. Coarse woollen cloth or *pattu* is woven in the Kangra hills for local use. At Multan useful rugs are made whose fabric is a mixture of cotton and wool. More artistic are the Biluch rugs with geometrical patterns, made by the Biluch women. These are excellent in colouring. They are rather difficult to procure as they are not made for sale. The weaving of China silk is a common industry in Amritsar, Bahawalpur, Multan, and other places. The *phulkari* or silk embroidery of the village maidens of Hissar and other districts of the Eastern Punjab has great artistic merit. As a wood-carver the Punjabi is not to be compared with the Kashmiri. His work is best fitted for doorways and the bow windows or *bokharchas* commonly seen in the streets of old towns. The best carvers are at Bhera, Chiniot, Amritsar and Batala. The European demand has produced at Simla and other places an abundant supply of cheap articles of little merit. The inlaid work of Chiniot and Hoshiarpur is good, as is the lacquer-work of Pakpattan. The number of workers in gold and silver goods far outnumber those in iron and steel. Brass-ware, copper-ware and earthen-ware are manufactured for domestic use. Ivory carving is carried on in Amritsar and Patiala.

Marketing of cottage industrial products.

586. The marketing of cottage industrial products is being facilitated by the establishment of the Arts and Crafts Depôt in Lahore. Here inlaid brass and ivory work, painted

and chased lacquer-work, pottery, damascened metal work, brass and *kansi* work, silver and enamelled jewellery, turned and carved ivory, basket work, carpets, embroidery, printed goods, silks and numerous other works of art manufactured in all parts of the Punjab are collected and offered for sale, thus providing a regular market to many cottage workers, whose artistic faculties might otherwise "waste their sweetness on the desert air."

Limitations on industrial progress in the Punjab: (*a*) supply of bulky local requirements; (*b*) exports of small bulk or replacing raw materials exported.

587. Industrial progress in the Punjab is subject to the limitation imposed by its geographical conditions (*paras.* 3, 4). Coal and minerals are limited (*paras.* 593 *foll.*) and the great possibilities which may ensure the development of the water-power of the Himalayas have not yet been realised. Industrial progress is therefore confined to the production of local requirements whose bulk prevents outside competition. Flour mills, ice factories, tanneries, woollen mills, glass works, saw mills, and cement works are all of this class. The absence of any industrial manufacture of agricultural implements in the Province illustrates the ignorance of agricultural conditions characteristic of the urban population. Manufactures for export must be of high value in proportion to bulk, such as carpets; or replace raw materials already exported, such as cotton-ginning factories and oil presses. Wheat is scarcely more bulky than flour, and is far less perishable. Consequently flour mills are confined to those which produce for local requirements. The export of machinery is rendered impossible on account of its bulk in relation to value, while the scattered nature of the mineral resources of the Punjab almost prohibits its production even for local use. But repairs should be done in the Province, and the training of skilled mechanic and the erection of extensive repair shops is a crying necessity.

Agricultural development necessary for industrial progress.

588. The demand for industrialism comes from capitalists seeking to employ capital and the middle classes seeking employment outside the overcrowded literary professions. Labour is fully employed in agriculture, which affords continually increasing profits. Industrial development would withdraw labour from agriculture, and

diminish the food supply. A further necessary condition of industrial progress lies, therefore, in the increase of agricultural production. For this are necessary (1) the employment of the spare time of agriculturists in by-industries or by the introduction of crops requiring labour in the off seasons, and (2) an efficient marketing system which would eliminate the army of middlemen who charge high prices to the public while underpaying the producer. The development of intensive cultivation (*e.g.*, of vegetables and fruits which yield a high return per acre) will be limited until some system of refrigeration is adopted which will allow milk, *ghi*, fruit and vegetables to be stored and transported without serious deterioration.

Industrial finance: the banking crisis of 1913.

589. Industrial progress is dependent on sound finance, and Punjab industry has suffered from a lack of that knowledge of business principles which is the foundation of European and American industrialism. About 1911 there was a boom in companies of doubtful reputation. Ignorance of business methods among the promoters, and still more a well-founded belief in the ignorance and credulity of those who would be their creditors and clients, led to the flotation of numerous hopeless ventures. Banking enterprise of an adventurous nature was rife, and miscellaneous trading companies with insufficient resources were floated in large numbers. In 1913-14, 10 banks with a paid-up capital of Rs. 19 lakhs closed their doors. In the following year 19 more banking companies failed and, as a result of the damage to the finance and credit of the community, 22 trading companies also came to an end. These failures were expedited by the stringency caused by war conditions and the greater regulation of joint-stock enterprise following on the passing of the Companies Act of 1913. This wave of optimistic investment and fraudulent flotation led to a shaking of credit and a disruption of trade from which the Province has not yet recovered. Joint stock enterprise is therefore a subject of distrust, which prevents it from taking its proper place in financial and industrial expansion. Though the existing companies are mainly on a sound basis many of the largest and soundest of them are not indigenous, but owe their capital and management to European firms.

590. As the Punjab is mainly an agricultural province, its industries are mainly based on its agricultural products. There are, however, exceptions in the case of big engineering workshops, such as the Railway Workshops, which have outgrown their original purpose, and also such essential industries as printing and power generating. Industries based on agricultural production have been greatly helped by the vast irrigation schemes which have recently been brought to completion. Such industries have developed rapidly of recent years. In 1914, there were 149 cotton-ginning factories working under the operation of the Factories Act, one oil mill and 6 flour mills employing a total of 10,000 operatives: whilst in 1921 the numbers had reached 212 cotton-ginning factories, 3 oil mills and 11 flour mills, with a total number of operatives of nearly 16,000.

Industries based on agriculture.

591. Much of the labour necessary for the increased industries is drawn from provinces other than the Punjab. Possibly as much as one-third of the factory workers come from Rajputana and Central India. This class of worker has little interest in agriculture as he possesses no land, whereas the Punjabi is naturally of the land and usually has a small plot of land belonging to him or to his family which keeps him interested and invites his attention during the harvesting season. Where factory work is seasonal and casual, labour is taken exclusively from the land and this forms a very convenient method by which country people can earn a livelihood between the season of sowing and reaping. Cotton-ginning factories are all seasonal and draw their labour from this type.

Industrial labour recruited from outside as well as Punjab.

592. The Punjab mining industry is relatively unimportant. During recent years it has, however, received a great forward impetus from two causes, the discovery of mineral oil in large quantities in the Attock district, and the rise in price and freight of coal from Bengal combined with the difficulty of obtaining it. Mineral oil has been found in only one place in the Punjab so far, but indications of oil have been discovered in one or two other localities. Oil springs have been known for many years to exist in the Rawalpindi and other districts in the Punjab, but the output was insignifi-

Mines: Oil.

cant until the discovery of the Khaur field, which produced ¼ million gallons in 1915. The total output of the Province in 1915 amounted to 251,500 gallons, but fell to 183,800 gallons in 1916. In 1918 the output rose to 750,800 gallons, but it fell to 114,000 gallons in 1919. In the same year the Burmah output was 200 and the Assam 10 million gallons. This comparison is sufficient to indicate the present unimportance of the Punjab oil industry. But it seems likely that it may expand considerably. At Rawalpindi the Attock Oil Company have set up a refinery equipped with the most modern machinery and are now placing petrol, kerosene oil, and lubricating oil on the market.

Coal mines.

593. The Punjab coal mines are situated in the tertiary or cretaceous coal-beds of the Salt Range (*para.* 5). The output in 1919 was only 46,000 tons as compared with 22 million tons in Bengal. It is a bituminous lignite, and, though low in fixed carbon, has a relatively high calorific value. The coal mines suffer considerably in certain areas from lack of efficient transport. The coal of the Province is generally very inferior and found in shallow seams of 2½ to 3 feet which makes its extraction expensive. One mine at Makarwal across the Indus is, however, an exception. Here a good steam coal is found in seams of 10 feet depth. It disintegrates, however, on exposure to the air for two or three months, and this renders it unsuitable for storing. This combined with bad transport facilities handicaps the mine considerably. The Geological Department's report indicates that coal may exist along the whole range where the Makarwal mine is situated, a matter which requires further investigation.

Iron.

594. Iron is found in Kangra district at several points along the Dhaola Dhar, in the form of crystal of magnetic oxide of iron embedded in decomposed and friable mica schists. The supply is practically inexhaustible, and the quality of the ore is equal to the best Swedish iron. The remoteness of the tract, combined with difficulties of carriage and absence of fuel, have hitherto prevented smelting on a large scale. Besides iron, antimony ore is found. Iron mines are also worked at Kot Khai in Simla and in the Hill States of Jubbal, Bashahr, Mandi and Suket. Sirmur

State possesses several iron mines, but they are not worked owing to their inaccessibility and the poor quality of the ore.

Copper and slate.

595. Copper was formerly smelted in considerable quantities in various parts of the Outer Himalayas in Kulu, where a killas-like rock persists along the whole range, and is known to be copper-bearing. Veins of galena and of copper pyrites occur in the Lower Himalayas, in Kulu, and in the Simla Hill States ; and stignite is found at Shigri in the valley of the Chandra river in Lahul. There are slate quarries at Bakhli in the State of Mandi, near Kanhiara in Kangra district, and throughout Kulu, which turn out a good quality of slate. There is a quarry at Kund in the Rewari *tahsil* of Gurgaon, but the slate and flake are not of good quality.

The Department of Industries.

596. Originally Government was guided in its relations with industry by the *laissez-faire* principles of the Victorian period. But with the war arose the idea that Government should itself do something to stimulate industry. A separate Director of Industries was first appointed in 1920. He is responsible under the Financial Commissioner (Development) and the Governor-in-Council for the administration of the Indian Factories Act, the Punjab Steam Boiler and Prime Movers Act, the Indian Mines Act and the Indian Electricity Act ; and under the Ministry of Agriculture he is responsible for the collection and distribution of industrial intelligence, supervision and promotion of technical and industrial education and generally the encouragement of the industries of the Province.

Necessities of industrial development: (*a*) Power.

597. Before any marked industrial developments can take place in the Punjab (*a*) cheap power, (*b*) transport and marketing facilities, and (*c*) technical education must be provided. As has been seen (*para.* 593) the local supply of coal is inadequate. Coal is mainly obtained from Bengal at an average price of Rs. 25 a ton, more than half of which is composed of freight charges. This heavy freight charge puts manufacturers in the Province at a great disadvantage when competing with those who are nearer the source of supply. It is doubtful if, with this great disadvantage, they will ever be in a position to compete with their manufactured goods in the world's markets. It is therefore im-

perative if the Province is to advance industrially that the development of the hydro-electric power, which exists in the Province, should be expedited.

(b) Transport and marketing.

598. Railway transport facilities have improved. The question of providing sidings to large mills and factories still, however, remains acute and requires careful handling. For the efficient marketing of agricultural products tramways are being considered, and the Tramway Engineer has been fully employed in making surveys and detailed reports for agricultural tramways in selected areas of the Province. The detailed report for the construction of tramways in the Lyallpur district was considered by the Communications Board (*para.* 286). In that district improved transport is urgently required, and the prospects for a self-supporting tramway are good. From the point of view of agriculture the district is one of the most progressive in the Punjab, and special marketing facilities are being developed by the Co-operative Department (*para.* 497).

(c) Technical education.

599. The scope for technical education is limited. In industrial Middle schools carpentry enlists three times the number of all the other crafts put together. This preponderance over the smith's art can only be understood when it is considered that the best wood-work can be done by hand tools only, but the best metal work requires for drilling, turning, screw cutting, polishing and fitting either foot or motor power machines which none of the schools possess. In the Government Railway Technical School, where machine tools are used, the craft of the smith enlists the larger number of students. The two remaining crafts, that of the copper-smith and weaving, are both crafts that are better taught in the bazar, and the industrial schools give no advantage either in improved machinery or design. Apart from these beginnings facilities for technical education of a very thorough kind in mechanical and electrical engineering, motor-car work, tanning, dyeing and boot and shoe manufacture will shortly be available to the people of the Province, as special institutions for these purposes are under construction or have the approval of Government.

The Board of Economic Enquiry

600. The Board of Economic Enquiry was constituted in 1919 in order to facilitate the scientific investigation of the more pressing

economic problems of both the rural and the urban communities. The Board consists of 26 members of whom 17 are appointed directly by Government and 9 are nominated either by Heads of Departments or Institutions, *e.g.*, the University. The Chairman of the Board was originally the Financial Commissioner and later the Hon'ble Minister for Agriculture. The Board is divided into two sections—the Rural and the Urban Section. The Chairman of each section is one of the Financial Commissioners. The most important investigation conducted by the Urban Section has been an enquiry by Mr. Caleb under the supervision of the Board into the cost of living of clerks and other low-paid Government servants. An enquiry into the *ghi* and milk supply of the Punjab undertaken by the University has been assisted by the Board. A change in the constitution of this section is under consideration. The Rural Section has completed an economic survey of certain villages in the Hoshiarpur district; prepared a standard questionnaire for future similar enquiries and materially assisted the Economic Conference at Lahore in January 1923. An investigator has also been appointed and is at work on the economic situation of the submontane tracts in the Dehra and Hamirpur *tahsils* of the Kangra district, the economic conditions of which are reported to be below the general Punjab standard, probably owing to the fact that no roads or railways traverse these *tahsils*. The Board is also preparing for an elaborate investigation of the economic conditions of agriculture in different parts of the Ferozepore district—a district selected because of the wide variations—in economic conditions which exist in various parts of the same district. The Joint Board received a grant of Rs. 20,000 in 1922-23 ; but in view of the financial stringency this sum was reduced by half for 1923-24.

Railway development in the Punjab rapid, originally for strategic reasons.

601. Industrial progress is largely dependent on communications, and the Punjab is fortunate in having a railway system which was for strategic reasons developed in advance of commercial and industrial requirements. The first railway line (Amritsar to Lahore) was put under construction in 1856 and opened for traffic in 1861. Wood had to be used for fuel. The line from Lahore to Multan, which at that time was connected with Karachi by the boats of the old Indus Flotilla, was opened in 1865;

Coal was introduced in 1872, in which year one goods train left Lahore daily for Ghaziabad. Through communication with Calcutta and Bombay was established in 1883. Thereafter progress was steady, if not rapid. The development of irrigation in the Punjab and Sind transformed the North-Western Railway. Owing to the burden of maintaining the unprofitable Frontier lines, this was the Cinderella Railway in India—the scape-goat of the critics who protested against the unwisdom of constructing railways from borrowed capital. But with the completion of the Chenab and Jhelum Canals, the North-Western became one of the great grain lines of the world, choked with traffic at certain seasons of the year and making a large profit for the State.

The War: Interruptions in traffic facilities.

602. Owing to the War and financial stringency, however, the railway development underwent little extension after 1914. Requirements in Mesopotamia and other Eastern War areas were supplied almost entirely by the Indian Railways, which depleted their staff, plant and rolling stock and even tore up some of their permanent way in a magnificent effort to meet the necessities of the military authorities. Moreover, economic conditions led to serious strikes on several of the railway systems of the country including the North-Western Railway which had to reduce its services of passenger traffic and entirely discontinue goods bookings for certain periods ; a serious shortage of coal, due to strikes in the mining centres and to shortage of rolling stock, required to import it into the Punjab, caused even more serious interruptions in traffic facilities. With their attention entirely devoted to supplying military demands and to maintaining their home services with as little interruption as possible the authorities could not attempt to carry out any but the most urgent construction within the Province, with the result that only 487 miles of new branch lines were opened during the decade 1911—1921, whilst in 1917 the Sutlej Valley Railway from Kasur to Lodhran with 208 miles of track was dismantled to provide permanent way material for military lines. Railway communications were, however, greatly developed in the Ferozepore, Jullundur and Hoshiarpur districts, while a fast traffic was greatly facilitated by the doubling of the lines from Ambala to Lahore and Lahore to Raewind.

Punjab Railways in 1922.

603. The Punjab now possesses an extensive system of railway communications. The main line of the North-Western Railway from Karachi enters the Province in the extreme south-west, and runs up to Samasata in Bahawalpur State, whence it divides and connects up with a system of lines running more or less parallel with the great rivers and spreading out like the leaves of a fan, till they reach another main line which runs along the northern boundary of the Province from Attock *viâ* Rawalpindi and Lahore to Ferozepore and thence to Delhi. This fan-shaped system of lines serves the whole of the western part of the Province within a triangle based on Campbellpur and Ferozepore with its apex at Samasata. From Lahore to Delhi there are two main lines, one *viâ* Ferozepore and Bhatinda and the other following the course of the Grand Trunk Road through Amritsar, Jullundur, Ludhiana and Ambala and thence through part of the United Provinces. These two main lines have numerous cross-branches and are also connected with other railways, such as the East India Railway from Delhi to Kalka *viâ* Ambala ; and the Bombay, Baroda and Central Indian Railway from Delhi to Rewari and thence to Bhatinda *viâ* Sirsa and Hissar. Together these various lines and branches form a very complete net-work over the central and south-eastern parts of the Province. The main external trade of the Punjab passes down the North-Western main line to Karachi, whilst the main lines to Delhi, and thence direct to the ports of Bombay and Calcutta and other towns of the Indian continent, provide the other most important external trade routes.

Deficiencies in the railway system.

604. The only portions of the Province not served by railways are the Himalayan tract in the north-east, in which the only line is the short Kalka-Simla Railway, and the Dera Ghazi Khan district and the eastern part of the Bahawalpur State. The western part of the Province, though well served by the fanshaped system of lines radiating from Samasata, lacks railway communication in a transverse direction. The presence of the rivers and the difficulties in connection with bridging them have prevented the construction of lines running from north-west to south-east.

Trade: Merchandise.

605. The main trade of the Punjab and Delhi is carried on by rail and river with other parts of India or with foreign countries through the ports of Karachi, Bombay and Calcutta. The weight and value of the imports and exports are registered on the railways and at river posts, the value is in many cases arbitrarily assigned and must not be taken to be more than a rough guide. The total imports during the decade 1911—1921, figures showing the average net import or export of the main articles of trade, and others showing the direction of the main streams of trade are given below. In the previous decade both imports and exports had more than doubled, in this decade imports have increased steadily and have again doubled, but exports have fluctuated and at the end of the decennium only exceeded their initial value by about fifty per cent. Until the end of 1918-19 exports and imports tended to vary together and the balance of trade was first on one side and then on the other, the total trade for the first eight years showing an adverse balance of only 4,19 lakhs against the Punjab, an insignificant sum well within the margin of error due to unregistered trade and to the arbitrary values assigned to registered goods. In the years 1919-20 and 1920-21, however, the balance of trade was against the Punjab to the extent of 8,82 and 21,96 lakhs.

Punjab internal trade in 1911—21.

Year	*Exports*	*Imports*
	Rs. (lakhs).	Rs. (lakhs).
1911-12	27,63	30,01
1912-13	32,02	31,76
1913-14	34,11	31,59
1914-15	27,58	31,23
1915-16	31,29	33,63
1916-17	33,90	34,29
1917-18	38,64	38,52
1918-19	52,25	50,58
1919-20	44,05	52,87
1920-21	39,46	61,42

Average net exports.	Rs. (lakhs).	*Average net imports.*	Rs. (lakhs).
Wheat ...	8,77	Cotton goods ...	10,59
Raw cotton ...	4,94	Sugar	4,46
Gram and pulses	4,92	Metals	2,61
Oilseeds ...	1,12	Coal and coke ...	1,39
Hides and skins	74	Jute	1,36
Wheat flour ...	67	Provisions ...	87
Wool ...	38	Oils	85
Jowar and *bajra* ...	7	Wooden goods ...	78
		Apparel	51
		Dyes and tans ...	29
		Spices	27
		Drugs	25
		Net total ...	3,50

MAIN DIRECTIONS OF TRADE.

To or from	*Exports.* Rs. (lakhs).	*Imports.* Rs. (lakhs).
United Provinces	6,40	8,34
Rajputana	2,54	1,73
Bombay	1,55	1,87
Sind	1,81	1,23
Bengal	15	1,99
Kashmir	21	73
Ports of—		
Madras	24	15
Bombay	4,61	6,45
Karachi	15,59	9,63
Calcutta	1,81	4,96

Absorption of treasure.

606. The registered movements of gold and silver show an annual average net import of 5,30 lakhs ; so that as far as any record exists the unfavourable balance of trade is not met by export of treasure, and indeed it is well known that the Province absorbs vast quantities of gold and silver which disappear from circulation and yet are not exported. It seems to follow that during the years 1919-20 and 1920-21 the Province was living on credit, and that unless there is a great expansion in export there will be a diminishing import in the near future.

Increasing imports combined with diminished exports.

607. The steady increase in imports indicates a steady increase in prosperity and in the general standard of living. They have doubled in ten years and quadrupled in twenty whilst the increase in the number of people for whom they are imported has only been about

three per cent. in twenty years. That exports have failed to keep pace with imports is due to the fact that they consist almost entirely of agricultural produce dependent in amount on the nature of the seasons, combined with the definite Governmental control on exports which was instituted during the War in an attempt to check the advance in prices of food. Every single article that has any considerable net export is a direct product of the soil, and the bitterest opponent of Malthusian principles would hesitate to maintain that a trade which doubles itself every ten years can be made up entirely of agricultural produce on the export side. The trade of the Punjab has been rendered possible in the past by the vast extension of cultivation and irrigation ; it may be rendered possible for a short time in the future by further extensions and by increased yields due to the spread of more scientific agricultural methods ; but the time is rapidly approaching when imports must be replaced by more local manufacture if the standard of living is to continue to rise.

Trade balance favourable with foreign countries: unfavourable with rest of India.

608. The nature of the principal imports indicate the needs of society in a simple state, and also show at once the main directions in which industrialism should be directed to meet the needs of the Province. It should be noted that the balance of trade with foreign countries through the ports of India is in favour of the Province, whilst that with other parts of India is heavily against it. In so far as imports of manufactured goods are concerned, it is more hopeful for the Punjab that the adverse trade balance should be with India than with foreign countries, for it will be easier for it to substitute its own manufactures.

External trade with Afghanistan, Central Asia and Tibet.

609. A small volume of trade passes over well-defined routes leading to Afghanistan, Central Asia and Tibet. Imports and Exports are registered at trading posts and the total value of these during the last decade is shown below. The total amount is so small that its effect on the resources of the Province is negligible, and the nature of the articles included in it indicates the improbability of any great expansion. Of the imports from Afghanistan no less than 62 per cent. have been in fruit, vegetables and nuts

whilst the only other items of importance have been *ghi*, hides and skins, raw wool and drugs; the exports have consisted of 25 per cent. manufactured leather goods, 25 per cent. Indian cotton piece-goods, 18 per cent. English cotton goods, and small quantities of rice and iron. The registration of trade with Central Asia was only placed on a satisfactory basis in 1913-14 and for the last eight years of the decade the principal merchandise imported and exported was as shown below ; the imports of raw silk and of *charas* are by far the most important and supply a considerable proportion of the quantities available in the provincial markets. Amongst exports it is to be noted that less than one-fifteenth of the cotton piece-goods are manufactured in India. Eighty per cent. of the imports from Tibet consist of raw cotton whilst borax accounts for another eight per cent., the only other imports of any size are of live animals and salt. The exports are negligible.

Punjab external trade in 1911—21.

	Imports.	*Exports.*
	Rs. (thousands).	Rs. (thousands).
Afghanistan.		
1911-12	37	23
1912-13	67	1,51
1913-14	58	71
1914-15	15	51
1915-16	27	1,85
1916-17	25	85
1917-18	27	5,98
1918-19	32	61
1919-20	28	1,10
1920-21	1,09	2,54
Central Asia.		
1911-12	1,79	1,21
1912-13	3,57	1,87
1913-14	10,95	17,37
1914-15	8,77	14,97
1915-16	11,41	13,29
1916-17	10,22	12,10
1917-18	13,42	29,69
1918-19	15,32	37,93
1919-20	10,91	42,57
1920-21	20,46	44,00

TIBET.

1911-12	2,48	50
1912-13	3,67	48
1913-14	4,2[illegible]	31
1914-15	3,18	37
1915-16	4,27	32
1916-17	5,85	50
1917-18	5,79	29
1918-19	6,65	18
1919-20	5,81	38
1920-21	6,60	36

CENTRAL ASIA.

	Imports.		*Exports.*
Raw silk ...	56%	Cotton piece-goods ...	48%
Charas ...	31%	Manufactured silk ...	14%
Raw wool ...	8%	Paints and colours ...	9%
Live animals ...	2%	Hides and leather ...	8%
		Indigo	7%
		Tea	3%

CHAPTER XVIII.

TRIBES AND LANGUAGE.

The hereditary nature of occupations the basis of caste.

610. Among all primitive peoples we find the race split up into a number of tribal communities held together by the tie of common descent, each tribe being self-contained and self-sufficing, and bound by strict rules of marriage and inheritance, the common object of which is to increase the strength and preserve the unity of the tribe. There is as yet no diversity of occupation. Among more advanced societies, where occupations have become differentiated, the tribes have almost altogether disappeared ; and we find in their place corporate communities or guilds held together by the ties of common occupation rather than of common blood, each guild being self-contained and self-governed, and bound by strict rules, the common object of which is to strengthen the guild and to confine to it the secrets of the craft which it practises. Such were the trades-guilds of the middle ages as we first meet with them in European history. But all modern inquiry into their origin and earlier constitution tends to the conclusion that the guild in its first form was, no less than the tribe, based upon common descent ; and that the fundamental idea which lay at the root of the institution in its inception was the hereditary nature of occupation. Now here we have two principles, community of blood and community of occupation. So long as the hereditary nature of occupation was inviolable, so long as the blacksmith's son must be and nobody else could be a blacksmith, the two principles were identical. But the struggle for existence is too severe, the conditions of existence too varied, and the character and capacity of individuals too diverse to permit of this inviolability being long maintained ; and in any but the most rudimentary form of society it must, like the socialist's dream of equal division of wealth, cease to exist from the very instant of its birth. And from the moment when the hereditary nature of occupation ceases to be invariable and inviolable, the two principles of community of blood and community of occupation become antagonistic. The antagonism still continues. In every community which the world has ever seen there have been grades or position and distinctions of rank ; and in all societies these grades and

distinctions are governed by two considerations, descent and calling. As civilisation advances and the ideas of the community expand in more liberal growth, the latter is ever gaining in importance at the expense of the former ; the question what a man is, is ever more and more taking precedence of the question what his father was. But in no society that the world has yet seen has either of these two considerations ever wholly ceased to operate ; in no community has the son of the coal-heaver been born the equal of the son of the nobleman, or the man who dies a trader been held in the same consideration as he who dies a statesman ; while in all the son has begun where the father left off. The communities of India in whose midst the Hindu religion has been developed are no exceptions to this rule ; but in their case special circumstances have combined to preserve in greater integrity and to perpetuate under a more advanced state of society than elsewhere the hereditary nature of occupation, and thus in a higher degree than in other modern nations to render identical the two principles of community of blood and community of occupation. And it is this difference, a difference of degree rather than of kind, a survival to a later age of an institution which has died out elsewhere rather than a new growth peculiar to the Hindu nation, which makes us give a new name to the old thing and call caste in India what we call position or rank in England.

Political basis of caste among agriculturists.

611. In India the occupation of the great mass of what may be called the upper or yeoman classes is the same. Setting aside the priests and traders on the one hand and the artisans on the other, we have left the great body of agriculturists who constitute by far the larger portion of the population. This great body of people subsists by husbandry and cattle-farming, and so far their occupation is one and the same. But they are also the owners and occupiers of the land, the holders of more or less compact tribal territories ; they are overlords as wells as villains ; and hence springs the cardinal distinction between the occupation of ruling and the occupation of being ruled. Where the actual calling of every-day life is the same, social standing, which is all that caste means, depends very largely upon political importance, whether present or belonging to the recent past. There is the widest distinction between the dominant and

the subject tribes ; and a tribe which has acquired political independence in one part of the country, will there enjoy a position in the ranks of caste which is denied it in tracts where it occupies a subordinate position.

The nature and evolution of the institution of caste.

612. Thus we see that in India, as in all countries, society is arranged in strata which are based upon differences of social or political importance, or of occupation. But in India the classification is hereditary rather than individual to the persons included under it, and an artificial standard is added which is peculiar to caste and which must be conformed with on pain of loss of position, while the rules which forbid social intercourse between castes of different rank render it infinitely difficult to rise in the scale. So too, the classification being hereditary, it is next to impossible for the individual himself to rise ; it is the tribe or section of the tribe that alone can improve its position ; and this it can do only after the lapse of several generations, during which time it must abandon a lower for a higher occupation, conform more strictly with the arbitrary rules, affect social exclusiveness or special sanctity, or separate itself after some similar fashion from the body of the caste to which it belongs. The whole theory of society is that occupation and caste are hereditary ; and the presumption is one which can be defeated, and has already been and is now in process of being defeated in numberless instances. As in all other countries and among all other nations, the graduations of the social scale are fixed ; but society is not solid but liquid, and portions of it are continually rising and sinking and changing their position as measured by that scale. The only real difference between Indian society and that of other countries in this respect is, that the liquid is much more viscous, the friction and inertia to be overcome infinitely greater, and the movement therefore far slower and more difficult in the former than in the latter. This friction and inertia are largely due to a set of artificial rules which have been grafted on to the social prejudices common to all communities by the peculiar form which caste has taken in the Brahmanical teachings. But there is every sign that these rules are gradually relaxing. Sikhism did much to weaken them in the centre of the Punjab, while they can now hardly be said to exist on the purely Muhammadan frontier. There was a still more rapid change

under the influences which British rule brought to bear upon the society of the Province. The British disregard for inherited distinctions has already done something, and the introduction of railways much more, to loosen the bonds of caste. The liberty enjoyed by the people of the western Punjab is extending to their neighbours in the east, and the old tribal customs especially are gradually fading away.

Tribal divisions of the landowning castes.

613. Within the caste the first great division of the landowning classes is into tribes; and the tribe appears to be far more permanent and indestructible than the caste. In the west of the Punjab the broader distinctions of caste have become little more than a tradition or a convenient symbol for social standing, while the tribal groups are the practical units of which the community is composed. When a family or section of a caste rises or sinks in the social scale, it often retains its tribal designation while it changes the name of its caste. Indeed it is probable that that designation not unseldom becomes the name of a new caste by which it is to be known in future. Thus the widow-marrying Chauhan Rájputs of Sonepat *tahsil* are now known popularly as Chauhans, and not as Rajputs; while their brethren of the next district, Karnal, who have not infringed the caste rule, are known as Rajputs, and only secondarily as Chauhan Rajputs. This theory is in accordance with the tradition by which the constant recurrence of tribal names in different castes is accounted for by the people themselves. The Chauhan Gujars, for instance, will tell you that their ancestor was a Chauhan Rajput who married a Gujar woman; and that his descendants retained the tribal name, while sinking to the rank of Gujars owing to his infringement of caste regulations. Indeed this is simply the process which we see in actual operation before our very eyes.

The tribal organisation of the people.

614. The Punjab affords a peculiarly complete series of stages between the purely tribal organisation of the Pathan or Baloch of the frontier hills and the village communities of the Jumna districts. The territorial distribution of the frontier tribes in the fastness of their native mountains is strictly tribal. Each clan of each tribe has a tract allotted to it; and within that tract the families or small groups of nearly

related families either lead a semi-nomad life, or inhabit rude villages round which lie the fields which they cultivate and the rough irrigation works which they have constructed. In these they have property, but beyond them there are no boundaries in the common pasture lands of the clan. Where the tribe or clan has occupied a tract within our border in sufficient numbers to undertake its cultivation, the distribution differs little from that obtaining beyond the border. We have indeed laid down boundaries which mark off areas held by groups of families ; but these boundaries are often purely artificial, and include hamlets which are united by no common tie and separated from their neighbours by no line of demarcation save one based upon administrative convenience. When however the tribe conquered rather than occupied the tract, and its cultivation is still in the hands of the people whom they subjugated, we find that they did almost exactly what we have done in the case last described. They drew arbitary boundaries which divided out the land into great blocks or village areas, and each clan or section of a clan took one of these blocks as its share, left the cultivating population scattered in small hamlets over the fields, and themselves occupied central villages of some strength and size. These two types are found more or less prevailing throughout the Western Plains and Salt Range Tract. But in the great grazing grounds we find, perhaps even more commonly than either of these, a third type which is not based upon any sort of tribal organisation. A miscellaneous collection of cultivators have broken up the land and so acquired rights in it, or have been settled by capitalists who acquired grants of land on condition of bringing it under cultivation. This form of settlement was especially encouraged under Sikh rule : when the cardinal principal of administration was to crush the gentry, to encourage cultivation, and to take so much from the actual cultivator as to leave nothing for the landlord.

The tribes of the Punjab Proper : The Jats.

615. The Jats are in every respect the most important among the agricultural tribes of the Province : and in numbers alone comprise little short of 5·5 million or over one-fifth of the whole population. Under this general term are included the Jat of the south-eastern districts, the Jat of the Central Punjab and in the west the mass of the Muhammadan tribes which are below the Sayad, the Baloch and the priestly

tribes and cannot substantiate a claim to Rajput descent. In the west indeed in common parlance the Jat is the husbandman much in the same way that the camelman is the Baloch. Here and elsewhere, as on the borders of Rajputana, where the Jat comes in contact with the Rajput, they have a somewhat inferior status, but in the central districts in which Sikhism is dominant they own no superior and are fully equal in social estimation to the Rajputs. Roughly speaking one-half of the Jats are Muhammadans, one-third Sikhs and one-sixth Hindus. In distribution, they are ubiquitous, and are equally divided over the five divisions of the country, though they are less numerous in the Rawalpindi Division than elsewhere. Comparatively few Jats are found in the Himalayan tracts and in Attock district, but in Rohtak, Ludhiana, Muzaffargarh and Mianwali they form more than one-third of the total population.

Rajputs.

616. Rajputs and allied casts with a total population of 2·3 million like the Jats comprise many tribes of different religions, races and social systems. By religion they are now mostly Muhammadan, only about one-fourth being Hindus, while a very few are Sikhs. By race they include the ancient ruling tribes of the Jumna Valley, the Chauhan and Tunwar ' which gave Delhi its most famous Hindu dynasties ' : the Bhattis of the south and centre who have migrated from Bikaner and Jaisalmer into their present seats : the Syals of Jhang : and the Punwars of the south-west. In the northern or submontane districts the Rajputs also represent the old ruling tribes such as the Chibhs of Gujrat, the Janjuas of the Salt Range, and others, while in the Kangra district they preserve a very old type of Hindu aristocracy. Like the Jats the Rajputs are widely distributed over the Province though there are few in Mianwali, Muzaffargarh and Dera Ghazi Khan. The greatest numbers are found in Rawalpindi, Kangra and Jhang. The Rathis, 120,000 in number and by religion Hindus, are found exclusively in Kangra and Chamba where they stand between the Rajputs proper and the Ghiraths and Kanets. All of these are now classified as allied to the Rajputs.

The Gujars.

617. The Gujars number 638,000. They are identified by General Cunningham with the Kushan or Yuchi or Tochari, a tribe of

Eastern Tartars. About a century before Christ their chief conquered Kabul and the Peshawar country ; while his son Hima Kadphises, so well known to the Punjab numismatologist, extended his sway over the whole of Upper Punjab and the banks of the Jumna as far down as Multan and the Vindhyas, and his successor, the no less familiar king Kanishka, the first Buddhist Indo-Scythian prince, annexed Kashmir to the kingdom of the Tochari. These Tochari or Kushan are the Kaspeiraei of Ptolemy ; and in the middle of the second century of our era, Kaspeira, Kasyapapura, or Multan, was one of their chief cities. Probably about the beginning of the 3rd century after Christ, the attacks of the White Huns recalled the last king of the united Yuchi to the west, and he left his son in charge of an independent province whose capital was fixed at Peshawar ; and from that time the Yuchi of Kabul are known as the Great Yuchi and those of the Punjab as the Kator or Little Yuchi. Before the end of the 3rd century a portion of the Gujars had begun to move southwards down the Indus, and were shortly afterwards separated from their northern brethren by an Indo-Scythian wave from the north. In the middle of the 5th century there was a Gujar kingdom in south-western Rajputana, whence they were driven by the Balas into Gujarat of the Bombay Presidency ; and about the end of the 9th century, Ala Khana, the Gujar king of Kammu, ceded the present Gujar-des, corresponding very nearly with the Gujrat district, to the king of Kashmir. The town of Gujrat is said to have been built or restored by Ali Khan in the time of Akbar. In the Punjab the Gujars essentially belong to the lower ranges and sub-montane tracts ; and though they have spread down the Jumna in considerable numbers, they are almost confined to the riverain lowlands. In the higher mountains they are almost unknown. Gujrat is still their stronghold. There alone have they retained their dominant position. Throughout the Salt Range tract, and probably under the eastern hills also, they are the oldest inhabitants among the tribes now settled there ; but in the west the Gakkhars, Janjuas, and Pathans, and in the east the Rajputs have always been too strong for them, and long ago deprived them of political importance. It may be said that the Gujar is a cultivator only in the plains. Even there he is a bad cultivator, and more given to keeping cattle than to following the plough.

Lesser dominant tribes.

618. There are other tribes which, like those already described, are, or have been, dominant in parts of the Punjab. In the Salt Range tract their tendency is to claim Arab or Mughal, and throughout the rest of the Punjab, Rajput descent, while in the western plains they are often classed as, and hardly to be distinguished from, Jats. They may be divided into three groups. In the Salt Range we have the Gakkhars of the northern cis-Indus portion of the tract, the Awans of the Range itself, and the Khattars who lie between them. In the western plains we find the Khokhars of Jhang and Shahpur, one of the most widely spread of the Punjab tribes, very generally recognized as Rajputs ; the Kharrals and Kathis of the Ravi, the latter being possibly the lineal descendants of the Kathaei, who, in their stronghold of Sangla, so stoutly resisted the victorious army of Alexander ; and the Daudpotras of Bahawalpur to which State they gave at once a founder and a dynasty. In the eastern plains the group is represented by the Dogras of the Upper Sutlej and Beas ; the Rors of Thanesar, whose home is on the great battle field of the Mahabharat: the Tagas of the Lower Jumna, possibly the descendants of the Scythian Takas ; and the Meos and Khanzadahs of the Northern Aravalis, probably of aboriginal origin, and the latter standing with respect to the former in a relation similar to that existing between Rajputs and Jats. With the exception of the Rors who are wholly and the Tagas who are partly Hindus the above tribes are Muhammadans.

Minor agricultural and pastoral tribes.

619. Further tribes are found, important both in point of numbers and as including the most skilful husbandmen of the Province, which generally hold an inferior position among the agricultural community, and seldom, if ever, occupy the position of the dominant tribe in any considerable tract of country. First come the widely-distributed market-gardeners proper or growers of vegetables, represented by Malis in the Jumna zone, Sainis in the eastern submontane, Baghbans or Maliars in the Salt Range tract, and Arains almost throughout the cis-Indus Punjab. The last caste is the most numerous, and in the west they are little better than menials. The Arain of the Central Punjab, however, is recognised as one of the most skilful and industrious agriculturists of the Province. They were largely selected for

the Chenab Colony, and Lyallpur now contains more Arains than any other district except Jullundur and Lahore. The Ghiraths are found in Kangra proper and the hills below it; while to the east the Kanets take their place. The Kambohs are probably allied to the Arains, and are found throughout the northern portion of the eastern plains, and in the middle valleys of the Sutlej and Jumna. The Mahtams of the central submontane and the whole valley of the Sutlej are probably of aboriginal stock, being in many parts still semi-nomad. The Ahirs are located in the south-eastern portion of the Delhi territory, where they once enjoyed considerable local importance. In the Punjab they have largely abandoned their hereditary occupation as herdsmen in favour of agriculture. The Gaddis of the Chamba Himalayas are a purely shepherd race and supposed to be of Khatri origin. Of the above tribes the Malis, Ghiraths, Kanets, Ahirs and Gaddis are Hindus, the Arains and Maliars Muhammadans and the Mahtams, Sikhs. The Sainis are both Hindus and Sikhs and Kambohs profess all three religions.

Tribal castes: Baloches.

620. The Baloch element was not affected by the changes of 1901, the borders of the North-West Frontier Province having been devised to leave the Baloch tribes under the Punjab Government. The Baloches form the dominant race in Dera Ghazi Khan district where they number 210,000 and Baloch tribes are found in considerable strength cis-Indus, in the Bahawalpur State and in the districts of Muzaffargarh, Multan, Jhang, and elsewhere. Cis-Indus, however, the status of the Baloch is always far lower than it is in Dera Ghazi Khan, and in Karnal, to the east of the Province, the Baloches sank to a criminal tribe. The total number of Baloches is now 530,000. The Baloch tribal system only exists in full force in Dera Ghazi Khan, in which district the chiefs or *tumandars* still exercise considerable authority, controlled on the one hand by custom and on the other by the British administration. Under this system the Baloch has preserved his national characteristics of hospitality, courage and fidelity to his word. He remains a keen horseman, though comparatively few enlist in our cavalry regiments, owing to their home-keeping tendencies and their inability to endure the continuous restraint of regimental discipline. As Muhammadans they are free

from bigotry, and are but little under the influence of fanatical *mullahs* or priests, in this, as in many other respects, contrasting favourably with the Pathans. Murderous outrages under the influence of religious excitement are exceedingly rare among the Baloches. The history of the Baloch tribes is still obscure. They advance a claim to Arab descent which may have some foundation in fact, but all that can be said with certainty is that 'about the middle of the 15th century the Baloches, who had some 500 years earlier occupied the western confines of the Lower Sulemans, moved northwards and eastwards into the Punjab along the mountains and the Indus Valley, expelling Pathans from the former, and subjugating the Jat inhabitants of the latter. In 1555 a large body accompanied Humayun in his victorious re-entry into India, and so obtained a footing in the Punjab proper.'

Pathans.

621. The only tracts in the Punjab in which the Pathans form the dominant agricultural tribes are the Chach country in the Attock *tahsil* of the district of that name and the Mianwali district, especially that portion which lies trans-Indus and constitutes the Isa Khel *tahsil*. The Pathan tribal system however only subsists in any force west of the Indus, and to the east of it the Pathan is well nigh as tractable as the Baloch or the Rajput. Pathans are found in all the districts and major States of the Punjab and, where not actually temporary immigrants employed in horse-dealing, labour or trade, are or claim to be descendants of families that have reached their present abodes in the train of conquering invaders. Large numbers are found in the Delhi and Lahore districts, but in all these cases the Pathans are hardly to be distinguished in character or customs from the Muhammadan peasantry among whom they now dwell. Even so the Pathan element in the population comprises all told no more than 267,000 souls.

Priestly and Religious castes: Brahmans.

622. Brahmans are represented in every district of the Punjab, as Hindus are found throughout the Province. They are most numerous however in the Himalayan area and represent 14 per cent. of the population in Kangra. In the Delhi and Jullundur Divisions generally they are widely represented, the proportion rising to 10 per cent. in Rohtak, but in all the western districts they are numerically weak.

In total numbers they are now barely one million. The Brahman in the Himalayas and in the east of the Province is often a landholder, and in that capacity hardly exercises any spiritual or ceremonial functions, whereas in the west he is almost invariably a dependent of the Hindu trading castes. The Brahmans are divided into two great territorial groups,—(*i*) the Gaur who are only found in any numbers east of a line drawn through Simla and Patiala, *i.e.*, in the basin of the Jumna, and (*ii*) the Sarsut, the Brahmans of the Punjab proper and *par excellence* of the Khatri and Arora castes. The social status of the Brahman depends primarily on the status of the caste, or section of a caste, to which he ministers. Thus the Brahman of the Khatri ranks higher than the Brahman of the Arora, while the Chamarwa or Chamars' Brahman stands entirely outside the pale of Brahmanism just as the Chamar is beyond the pale of Hinduism. But further the status of a Brahman depends on occupation, for those who receive inauspicious offerings, or are employed on occasions of death, form lower sub-castes, such as the Acharaj, the Sawni, the Vedpatr and the Dakaut. As a body the Brahmans appear to be retrogressing in wealth and influence, and, as they find a difficulty in living on the alms they receive as spiritual guides, are taking increasingly to secular pursuits.

Sayads and Qureshis.

623. Among the Muhammadans the Sayads and Qureshis occupy a position somewhat analogous to that of the Brahmans in the Hindu community, and they also are largely landholders especially in the west. The Sayads and Qureshis comprise groups of very diverse origins. In the south-west and occasionally elsewhere are to be found families with well-founded claims to be descended from tribe of the Prophet, but the claim to Sayads or Qureshi origin is very generally advanced by families which profess a saintly character or supernatural powers. The Sayads now number 250,000 souls. They are very widely distributed, but are actually strongest in the Rawalpindi Division. Qureshis number 98,000 and are continually on the increase. These figures exclude such tribes as the Chishtis and Bodlas who claim Qureshi origin. Qureshis are confined exclusively to the Lahore, Rawalpindi and Multan Divisions, and, as in the case of the Sayads, are most numerous in Rawalpindi Division.

Religious orders.

624. There are further a number of religious orders, usually celibate in theory, but by no means rigorously so in practice. These orders thus tend to form quasi-religious castes and it is impossible to draw any line between those who are members of an order and those who are members of the castes which bears the same name as the order. These orders were returned to the number of 277,000 all told as Fakirs by caste, of whom the Muhammadan Madaris and Hindu Bairagis were the most numerous. In addition to these, Madaris returned as such numbered 36,000 and Jogis 69,000 souls.

The mercantile castes : Hindus.

625. The Hindu trading castes fall into three main groups — (*i*) the Khatris, in the central and more especially the north-western districts of the Province, (*ii*) the Aroras, in the south-west, and (*iii*) the Banias of the south-east. Other but less important groups are the Bhatias, confined to the western districts, the Suds and Bhabras, found only in the sub-Himalayan districts, and the Pahari Mahajans and Bohras of the Himalayan area. The Khatris (456,000) stand highest in the social scale. They are a distinctively Punjab caste, and have a remarkably complex social system. Though they gave Sikhism its founder and most of its great religious leaders, they are mostly Hindus, only the sections to which the Sikh leaders belonged being, as a rule, Sikh by religion. The Aroras (716,000) claim a Khatri origin, but the point is a doubtful one, as in many respects their customs are different, though their social organization closely resembles or imitates that of the Khatris. The Banias of the Punjab are mainly of the Agarwal sub-caste, a few Saralias and Oswals being found. Their organization is in marked contrast to that of the Khatris, and they form in reality a great occupational group divided into several sub-castes, based on sectarian differences, of which the Maheśris or Śivaites are in example. The Bhatias (11,000) are an immigrant caste of traders from Western Rajputana, while the Bhabras (8,000) and Suds (19,000) are probably indigenous to the Punjab, the former being mainly Jains. The Khatris, and indeed most of the trading castes, are not, however, exclusively traders, but are found in most of the learned professions and in Government service, and they also engage in banking and money-lending. Of the Hindu castes the most progressive appear to be the Agarwal Banias

and the Aroras, the rigid social system of the Khatris apparently militating against their advance as a body.

The Banias.

626. The word Bania is derived from the Sanskrit *banijya* or trade; and the Bania, as the name implies, lives solely for and by commerce. He holds a considerable area of land in the east of the Province; but it is very rarely indeed that he follows any other than mercantile pursuits. The commercial enterprise and intelligence of the class is great, and the dealings of some of the great Bania houses of Delhi, Bikaner, and Marwar are of the most extensive nature. But the Bania of the village spends his life in his shop, and the results are apparent in his inferior physique and utter want of manliness. He is looked down upon by the peasantry as a cowardly money-grabber; but at the same time his social standing is from one point of view curiously higher than theirs, for he is, what they are not, a strict Hindu, he is generally admitted to be of pure Vaisya descent, he wears the *janeo* or sacred thread, his periods of purification are longer than theirs, he does not practise widow-marriage, and he will not eat or drink at their hands. Religious ceremonials and the degrees of caste proper are so interwoven with the social fabric that the resulting position of the Bania in the grades of rustic society is of a curiously mixed nature. The Bania is hardly used by the proverbial wisdom of the countryside. "He who has a Bania for a friend is not in want of an enemy;" and, "First beat a Bania, then a thief." And indeed the Bania has too strong a hold over the husbandman for there to be much love lost between them. Yet the money-lenders of the villages at least have been branded with a far worse name than they deserve. They perform functions of the most cardinal importance in the village economy, and it is surprising how much reasonableness and honesty there is in their dealings with the people so long as they can keep their business transactions out of a court of justice.

Muhammadans.

627. The principal Muhammadan trading "castes" are the Khojas, Parachas and Khakhas of the west, but other Muhammadan castes such as the Pathans, Sheikhs and Kashmiris also engage in trade. The term Khoja is of Persian origin and is conferred upon converts of all classes though it is usually confined to Khatris, Aroras, Brahmans and Bhatias who have

accepted Islam. Khakha is somewhat similarly used. The Arabic term Sheikh, which does not in the Punjab denote a caste, is the title usually assumed by converts to Muhammadanism whose original Hindu caste was not very high.

Artizan and menial castes.

628. The menial classes include the unclean castes, like the Chuhras, or sweepers who stand outside the pale of Hinduism and who can only rise in the social scale by abandoning their hereditary calling and becoming Muhammadan converts, modern Sikhism offering little opportunity to the lowest castes to rise in social position. There is, however, but little doubt that the definite abandonment of a lower for a higher occupation leads, sooner or later, to promotion in the scale of castes, even amongst the Hindus, and this fact renders it impossible to form any conclusions as to the relative progress of the various castes, for a decrease in the numbers of any given group may simply mean that many of its members have adopted a new pursuit or handicraft and been received into a higher caste. Conversely, it not infrequently occurs that fragments of the dominant castes are driven by circumstances to take to a trade or handicraft, and are gradually absorbed into its caste. This process must have been exceedingly common in former times when sudden political changes were frequent, and thus the modern lower occupational castes comprise many diverse elements, a fact which explains the extraordinary complexity of the social groups.

Artizan castes.

629. The highest of the artizan castes are the Tarkhans or carpenters and Lohars or smiths, who are practically indistinguishable. The caste comprises skilled mechanics many of whom are rising under British rule to the status of a professional class as trained engineers. The Hindu Chamar, Sikh Ramdasia, and Muhammadan Mochi are the great leather-working castes: and the Jullaha often called Paoli in the west, is the weaver of the Punjab. It is, however, impossible entirely to separate these castes from the Chuhra, for south of the Sutlej the term Chuhra-Chamar is applied to the two castes collectively, the idea apparently being that working in leather defiles, so that the Chamar too is not within the pale of Hinduism. Impurity is, however, a question of degree, and the Chamars have several sub-castes, of which one, the Bauna, consists of weavers. Similarly Mochi-Jullaha is used of the leather-working and

weaving castes collectively. The Chamars and Mochis together form the most numerous of the artizan castes in the Province and number over 1½ millions. The Kumhar or potter is not generally higher than the above in the social scale. He is most numerous where well-irrigation is most largely practised.

Menial castes.

630. Among the menials the Nai is an important functionary as he is a leech or surgeon as well as barber, while in the latter capacity he acts as an ambassador or as a go-between on formal occasions. The numbers (360,000) testify to the usefulness of the Nai in the community. The Dhobi or washer-man, the Darzi or tailor, the Chhimba or calico-printer, the Lilari or dyer in blue, and the Rangrez or dyer in red, constitute a group separated only by distinction of occupations, which are all combined by the Charhoa in the south-western districts. Similarly the Teli or oilman can hardly be separated from the Penja or cotton-scutcher and Kassab or butcher, all these occupations being commonly followed by the same person. Again the Hindu Jhinwar (or Dhinwar), the water-carrier, is so called when he acts in that capacity. He is also known as a Mahra, but as a bearer of burdens he is called a Kahar and if a cookshop-keeper or grain parcher Bhatiara or Bharbhunja. If a Muhammadan the water-carrier is called Machhi. In the Himalayas the organization is somewhat different. In the low hills the Barara land Batwal perform general menial service, the Meg weaves and works in leather, and the Dumna scavenges and works in grass ; while in the higher hills the Koli, Dagi and Chanal, as they are called almost indifferently, perform all menial offices.

Scavenger castes.

631. The Chuhras, called throughout the west of the Punjab Musallis or Kutanas when Muhammadans, are returned as of all religions. The Sikh Mazbi is by origin a Chuhra, who has, for some few generations at least, observed the ordinances of Sikhism, and abandoned the most degrading of the Chuhra's functions, so that he should be regarded as a degree above the scavenger castes. The Chuhra is an indispensable element in the village community of the eastern Punjab, but not so in the west, where the sweeper is often not to be found, and in consequence but few are returned in the districts on the Indus. In the Central Punjab this caste probably furnishes more agricultural labourers than sweepers,

and they are very largely employed in this capacity on the Chenab Canal. Those who have taken permanently to working in leather or weaving have doubtless for the most part been returned as Chamars or Jullahas. Chuhras and Musallis now number 1,111,000.

Foreign races.

632. A few tribes such as the Mughals, Arabs and Turks still preserve names of a foreign origin. The Mughals number 89,000 souls and may be regarded as in the main descended from the Mughal armies which invaded India. They are somewhat widely distributed, but are most numerous in the Rawalpindi and Jhelum districts, which lie on the track followed by the Mughal armies.

Peddlers and carriers.

633. The Banjaras and Labanas are the travelling traders of the submontane tracts, the former being found in the east and the latter in the west, while there is a considerable colony of Labanas on the Lower Indus in Muzaffargarh. The two castes are probably the same people under different names.

Minor professional castes.

634. The Mirasi is the family genealogist in Muhammadan tribes and also acts as a bard, a profession also followed by the Bhats and certain other minor castes. The Mirasis are numerous (237,000) and in the west at least occupy a low position in the social scale. The Bahrupias and Bhands are hereditary actors.

Vagrant, criminal and gipsy castes.

635. The vagrant population includes large elements like the religious mendicants, which form no part of vagrant or gipsy tribes. Moreover, the latter are not always criminal, nor, on the other hand, are the criminal tribes always vagrant. Thus the vagrant tribes comprise the Ods, the Beldars and the Changars, all of whom are navvies and non-criminal. Other vagrants are the Bawarias on the middle Sutlej, the Aheris and Thoris of the eastern districts on the Rajputana border, who are hunters, and the Jhabel, Kehal and Mor tribes of the lower Indus Valley, who are fishermen. These, with the exception of the Bawarias, may also be regarded as in the main non-criminal. Essentially criminal tribes are the Bawarias, the Harnis and the Sansis of the centre and submontane districts, the Minas of Gurgaon, the Baloches and Tagus in Karnal, the Mahtams especially in Lahore, and the Pakhiwaras and Bhats

in Sialkot, all of whom are under the operation of the Criminal Tribes Act. These tribes, though criminal, are however not always 'vagrant,' as many of them own land. The gipsy tribes are the Nats, Bazigars, Pernas and Kanjars and in the hills the Hesis, all of them wandering minstrels, acrobats and prostitutes.

Languages, Tibeto-Burman, Iranian and non-Sanskritic Indian.

636. With the exception of Tibeto-Burman, spoken in pure form by only 5,000 persons in the Himalayan canton of Spiti and in a debased form in Lahul and Upper Kanawar, the vernaculars of the Punjab belong entirely to the Aryan family of languages. Of this family the Indian branch greatly predominates, the Iranian being represented only by 59,000 persons speaking Pashto, 57,000 speaking Baluchi, and 1,600 speaking Persian. The Pashtu is practically confined to the Pathan tribes settled in Attock district and in the Isa Khel *tahsil* of Mianwali on the banks of the Indus, and to Pathan immigrants. Baluchi is virtually confined to Dera Ghazi Khan district and the adjacent State of Bahawalpur. Persian is spoken only by immigrant families and refugees from Persia and Afghanistan. Kashmiri is a non-Sanskritic Indian language spoken by 4,700 immigrants from Kashmir.

Sanskritic Languages: Hindi, Punjabi and Pahari.

637. But the most important languages of the Punjab are Sanskritic. Lahndi (spoken by 4·3 million) is the language of the north and west of the Province, a line from Jhelum town to Pakpattan in Montgomery being roughly its eastern limit. The name, though appropriate, meaning the setting sun, is not in use locally. The language has numerous local designations indicating differences of dialect, the chief of which are Dherawal, Bahawalpuri, Multani, Hindki, Jatki, Pothwari, Thalochri, Dhanni and Ghebi. Sindhi, a closely allied tongue, is spoken as a local dialect in the south-west corner of Bahawalpur. Dr. Grierson, the great expert on Indian languages, divides Lahndi into three groups—(1) the southern (standard dialect), (2) the north-east (Pothwari, &c.) and (3) the north-west (Dhanni, &c.); but the grouping is tentative, and no attempt to allocate dialects to groups has been made at this census. Of the languages of the important Western Group, Western Hindi includes Hindustani (·5 million), Urdu (1·3 million) and other Hindi (1·7 million), and is the dialect

of the Ambala Division and included States: Hindustani is the rural language in the Karnal and Ambala districts and other Hindi elsewhere, while Urdu is the polished language of the towns both in this part of the Province and generally. The distinctions, however, between these dialects are not clearly defined. Rajasthani, as the language of Rajputana, fringes the boundary of the Province from Bahawalpur to Gurgaon and includes the Bagri of Hissar, Ferozepore and Patiala and the Mewari of the Gurgaon Meos. Punjabi is the dialect of the Central Punjab plains and under present classification includes the Dogri of the Kangra Hills and the adjoining districts of Sialkot and Gurdaspur, though some authorities classify Dogri as Western Pahari. The plains language is differentiated as "Standard Punjabi." It is not easy to differentiate between some forms of Punjabi and of Lahndi. Western Pahari is spoken in the Simla Hills, in Chamba and parts of Kangra. Four groups are recognised by Dr. Grierson—the Simla group (·4 million), Kulu group (·1 million), Mandi group (·2 million) and Chamba group (·1 million), respectively. Of the Indian language groups of little importance in the Punjab, the southern is represented by Marathi, the eastern by Bengali and the northern by Central Pahari (Garhwali) and Eastern Pahari (Naipali), the language of the Gurkhas. The interesting Gipsy languages are mainly used for secret conversation. The chief patois returned in the census are Odki, Labanki and Bawaria spoken by the Ods, Labanas and Bawarias. There are many speculations as to the origin of these languages, but no theory as yet commands universal favour.

CHAPTER XIX.

RELIGIONS.

Religions of the Punjab.

638. The Punjab is a land of many religions. Hinduism, the original religion, has borne in the Punjab the full brunt of the onslaught of Islam; while another militant religion, Sikhism, has also made many converts. Christianity also has in the Punjab an importance of its own from the large numbers of British troops cantoned in the Province. The relative numbers of the various religions can be seen from the table below :—

POPULATION (MILLIONS) OF THE PUNJAB BY RELIGIONS.

	Total.	Hindus.	Muhammadans.	Sikhs.	Christians.
Punjab (including States).	25·1	6·8	12·8	3·1	·3
British Territory only.	20·7	6·6	11·4	2·3	·3

The elasticity of Hinduism.

639. The Hinduism of the Vedas was a clearly defined cult followed by a select society of a superior race living among despised barbarians of the lowest type. But the difficulty of defining the meaning of modern Hinduism springs chiefly from its marvellous catholicity and elasticity. It is in the first place essentially a cosmogony rather than a code of ethics. The esoteric teaching of the higher forms of Hinduism does doubtless include ethical doctrines, but they have been added to rather than sprung from the religion itself. Indeed it would seem that a polytheistic creed must, from the very nature of things, be devoid of all ethical significance. The aspects of nature and the manifestations of physical force are manifold, and can reasonably be allotted to a multiplicity of gods, each supreme in his separate province; but only one rule of conduct, one standard of right and wrong is possible, and it cannot conveniently be either formulated or enforced by a Divine Committee. In many respects this separation of religion from ethics is doubtless an advantage, for it permits of a healthy development of the rules of conduct as the

Mahammadan. Above 80 p.c. 60-80 p.c.

Hindu. Above 90 p.c. 75-90 p.c. 50-75 p.c.

Sikh. 20-43 p.c.

Fig. 19. Map showing distribution of religions.

ethical perceptions of the race advance. When the god has once spoken, his worshippers can only advance by modifying their interpretation of his commands ; and no greater misfortune could befall a people than that their religion should lend all the sanctions of its hopes and terrors to a precise code of right and wrong, formulated while the conscience of the nation was yet young and its knowledge imperfect.

Mixture of earlier Dravidian cults with the Vedic creed.

640. But if the non-ethical nature of the Hindu religion is in some respects an advantage to its followers, it has also greatly increased the difficulty of preserving that religion in its original purity. The old Aryans who worshipped the gods of the Vedas were surrounded by races whose deities differed from their own in little but name, for both were but personifications of the forces of nature. What more natural then that, as the two peoples intermingled, their gods should gradually become associated in a joint Pantheon. If the gods of the Vedas were mightier, the gods of the country might still be mighty. If malevolent it was well to propitiate them ; if benevolent, some benefits might perhaps be had from them. In either case it was but adding the worship of a few new gods to that of many old ones ; for since neither these nor those laid down any immutable rules for conduct or belief, no change of life, no supersession of the one by the other was necessary. The evils the Hindus feared from their deities were physical ; the help they hoped for material and not spiritual. Their gods were offended, not by disbelief and sin, but by neglect ; they were to be propitiated, not by repentance and a new life, but by sacrifice and ceremonial observance ; and so long as their dues were discharged they would not grudge offerings made to others as an additional insurance against evil. The members of the Hindu Pantheon had many ranks and degrees, and, among the superior gods at any rate, each worshipper selected for himself that one which he would chiefly venerate. Thus it was easy to add on at the bottom of the list without derogating from the dignity of those at the top ; while the relative honour in which each was held presently became a matter for the individual to decide for himself. And so we find that the gates of the Hindu, as of the classical Olympus have ever stood open to the strange gods of the neighbourhood, and that wherever Hindus have come into contact with worship other than

their own they have combined the two, and even have not infrequently given the former precedence over the latter. The Hindu of the plains worships the saints of his Musalman neighbours, and calls his own original gods by Muhammadan names unknown to an Indian tongue ; the Hindu of the hills worships the devils and deities of the aborigines, and selects for special honour that one of his own proper divinities whose nature is most akin to theirs. Both mollify by offerings innumerable agencies, animal, human, demoniacal, or semi-divine, who are not perhaps ranked with the greater gods of the temples, but who may do harm, and to propitiate whom is therefore a wise precaution.

Brahminism the distinguishing feature of Hinduism.

641. But through all these diversities there does run a common element, the clue to which is to be found in the extraordinary predominance which the priestly class have obtained in India, as the explanation of the diversity itself is largely to be found in the ambition of that class. In polytheistic Europe the separation of ethics from religion was no less complete than in India ; but while in India the study of the two was combined, in Europe Greece developed religion into philosophy while Rome formulated practical ethics in the shape of law, and each was content to receive at the hands of other the branch which that other had made her own. When Christianity swept away the relics of the old gods, the separation had become too complete to be ever wholly obliterated ; and though the priests of the new monotheism struggled fiercely, and with no small measure of success, to recombine the two and to substitute the canon for the civil law, yet there ever existed by the side of but distinct from the clergy, a lay body of educated lawyers who shared with them the learning of the day and the power which that learning conferred. If then under such circumstances the political power of the Church in Europe was for centuries so immense for good or evil as we know it to have been, it may be conceived how wholly all authority was concentrated in the hands of the Brahmans and how they exercised that power in India, where all learning of every sort and kind was absolutely confined to the priestly class. The position of the Brahmans with respect to religion in India seems to have been closely analogous to that which the lawyers formerly held with respect to law in England. The langu-

age in which religious rites were conducted was scrupulously kept from the knowledge of the people, while the procedure was extremely technical, and any error in form, however minute, destroyed the efficacy of the ceremony. The result was that Hinduism early degenerated from a religion into a sacerdotalism, and would, in its present form, be far better described as Brahmanism than by any other single word ; and it is this subjection to and veneration for the Brahman which forms the connecting link that runs through and binds together the diverse forms of worship and belief which constitute Hinduism.

Development of the caste system.

642. It is in this predominance of the priesthood, moreover, that we may find an explanation at once of the catholicity and of the exclusiveness which characterise the Hindu religion. If to give to a Brahman is to worship God, the larger the circle of worshippers the better for the Brahman ; and if new worshippers will not leave their gods behind them, it would be foolish to exclude them on that account, as there is ample room for all. On the other hand, as the levitical body so increased in numbers that a portion of them was necessarily illiterate, the Brahmans were compelled to fall back upon hereditary virtue as the only possible foundation for the power of their class. Here they found in the tribal divisions of the people, and in the theory of the hereditary nature of occupations which had sprung from them, an institution suited to their purpose and ready to their hands. This they developed into that complex web of caste-restrictions and disabilities which envelops a high caste Hindu from his mother's womb. And so the special power and sanctity of the Brahman came to depend for its very existence upon the stringency with which caste-restrictions were maintained, the act of worship was subordinated to the idea of ceremonial purity, and for a definite creed was substituted the domination of a priestly class, itself divided into a thousand sects and holding a thousand varieties of doctrine. To the aborigine who, with his gods on his back, sought admission within the pale of Hinduism, these restrictions presented no obstacle. They were but developments of the system which obtains in all primitive forms of society ; and so far as they differed from the rules which he already observed, they tended to raise him in the social scale by hedging him round with an exclusiveness which

was flattering if inconvenient. But to the outcast whose hereditary habits or occupation rendered him impure from birth, admission was impossible, at least to the full privileges of Hinduism.

Hinduism is not characterised by a fixed belief.

643. The sacerdotal despotism has now overshadowed the religious element; and the caste-system has thrust its roots so deep into the whole social fabric that its sanction is social rather than religious. A man may disbelieve in the Hindu Trinity, he may invent new gods of his own however foul and impure, he may worship them with the most revolting orgies, he may even abandon all belief in supernal powers, and yet remain a Hindu. But he must reverence and feed the Brahman, he must abide by caste rules and restrictions, he must preserve himself from ceremonial pollution and from contact and communion with the unclean on pain of becoming *anathema maranatha*. With individuals indeed even these restrictions are relaxed, on the condition that they affect a personal sanctity which, by encouraging superstition and exciting terror, shall tend to the glorification of the priesthood. But the masses must observe the rules; and any who should, like Buddha or Baba Nanak, propose to admit the body of the laity to share in a license which is permitted to the naked ascetic, would at once be disavowed. The Christian and Buddhist recognise no distinction of caste, nor does the Musalman save where influenced by the example of the Hindu, while all three profess to disregard the Brahman; and for this reason, and not because they worship a different god, the Hindu regards them as of a different religion.

Modern Hinduism.

644. Thus, while Hinduism in its purity may be defined as the religion of the original Aryan immigrants into India as set forth in the Vedas, Hinduism as it now exists may perhaps be best described as a hereditary sacerdotalism, with Brahmans for its Levites, the vitality of which is preserved by the social instituion of caste, and which may include all shades and diversities of religion native to India, as distinct from the foreign importations of Christianity and Islam, and from the later out-growths of Buddhism, doubtfully of Sikhism, and still more doubtfully of Jainism. It has been the great misfortune of Hinduism that the path of service has come to mean the path not of altruistic

service to mankind but the path of service conceived in a ceremonial sense to priests, religious recluses and mendicants and to idols. It is the great aim of the modern religious reform movements such as the Arya Samaj and the Brahma Samaj to rescue the path of service from this spurious interpretation and to make altruistic social service an integral part of religion.

The Pantheon of the Hindu peasant.

645. The student who, intimately acquainted with the gods of the Hindu Pantheon as displayed in the sacred texts, should study the religion of the peasantry of the south-east Punjab, would find himself in strangely unfamiliar company. Brahma is there never mentioned save by a Brahman, while many of the villagers would hardly recognize his name. It is true indeed that all men know of Siva and of Vishnu ; that a peasant, when he has nothing else to do to that degree that he yawns perforce, takes the name of Narain ; that his familiar salutation is *Ram Ram*, and that Bhagwan is made responsible for many things not always to his credit. But these are the lords of creation and too high company for the villager. He recognizes their supremacy indeed ; but his daily concern in this work-a-day world is with the host of deities whose special business it is to regulate the matters by which he is most nearly affected. The temples to these great gods are generally built, those to Vishnu by Brahmans or Bairagi monks, and those to Siva by Banias ; and the villager will perhaps not enter them oftener than twice a year, while, as they should be entered fasting, the young men of the family who cannot spare the time from their ploughs will never set foot inside them. But if the peasant takes but small heed of the great Trinity of his faith, he has acquired, perhaps from his Musalman brethren who live in the same village with him, a strong monotheistic bias, and his innate belief in the divinities whom he worships is often of the weakest. He will generally end any information he may be giving you about his gods by remarking, with a smile and a shake of the finger, "but it is a *kaccha* religion,"[2] or "after all there is but one Great One." Of course the existence of such a feeling is compatible with the most scrupulous care on his part not to neglect any of the usual observances ; and whatever might be his private conviction or absence of conviction, a man would feel that it would be pre-eminently unsafe to

omit the customary offerings, and would be thought ill of if he did so.

Hinduism in the hills.

646. The Hinduism of the hills differs considerably from that of the plains. It would seem that in all mountainous countries, the grandeur of their natural features and the magnitude of the physical forces displayed lead the inhabitants to deify the natural objects by which they are surrounded, or rather to assign to each its presiding genius, and to attribute to those demons a more or less malevolent character. The greater gods, indeed, are not unrepresented in the Punjab Himalayas. There are the usual Thakurdwaras sacred to Vishnu in some one of his forms, and Shivalas dedicated to Siva. But though Naths, with their ears bored in honour of the latter god, are to be found in unusual numbers, these deities are little regarded by the the people, or at any rate by those of the villages. The malignant and terrible Kali Devi, on the other hand, is worshipped throughout the Kangra mountains; and sacrifices were offered up to her before the introduction of British rule. But the every-day worship of the villager is confined to the *Lhas* or genii of the trees, rocks, and caves of Lahul, and the local spirits or demons of Kulu, variously known as *Devatas* or godlings, *Devis* who are apparently the corresponding female divinities, *Rakhis* and *Munis* or local saints, *Siddhs* or genii of the hill-tops and high places, *Jognis* or wood fairies, *Nags* or snake-gods, and by many other names, though for practical purposes little distinction is apparently drawn between the various classes. A favourite situation for a shrine is a forest, a mountain peak, a lake, a cave, or a waterfall; but almost every village has its own temple, and the priests are generally drawn from among the people themselves, Brahmans and other similar priestly classes seldom officiating. Idols are almost unknown, or where found, consist of a rude unhewn stone; but almost every deity has a metal mask which is at stated periods tied on to the top of a pole dressed up to represent the human form, placed in a sedan chair, and taken round to make visits to the neighbouring divinities or to be feasted at a private house in fulfilment of a vow. Each temple has its own feasts also, at which neighbouring deities will attend; and on all such occasions sheep or goats are sacrificed and eaten, much hill-beer is drunk, and the people amuse-

themselves with dances in which the man-borne deity is often pleased to join. There are also other domestic powers, such as *Kala Bir*, *Nar Singh*, the *Paris* or fairies, and the like, who have no shrines or visible signs, but are feared and propitiated in various ways. Thus for the ceremonial worship of *Kala Bir* and *Nar Singh*, a black and a white goat respectively are kept in the house. Sacrifice of animals is a universal religious rite, and is made at weddings, funerals, festivals, harvest time, on beginning ploughing, and on all sorts of occasions for purposes of purification, propitiation, or thanksgiving. The water-courses, the sprouting seeds, the ripening ears are all in charge of separate genii who must be duly propitiated.

Rise of Sikhism: Baba Nanak.

647. Sikhism was founded by Baba Nanak, a Khatri, who was born at Talwandi near Lahore in 1469 A. D., and after travelling and preaching throughout a great part of North-Western India, died at Kartarpur in Jullundur in 1539 A. D. He was succeeded by nine Gurus. In its origin Sikhism had much in common with Buddhism. Nanak and Buddha alike revolted against a religion overladen with ceremonial and social restrictions, both rebelled against the sore burdens which the priests would have them bear, the tendency of both was to quietism. But the form which the doctrines of each assumed was largely influenced by his surroundings. Buddha lived in the centre of Hindu India, and among the many gods of the Brahmans. These he rejected. He knew of nought else, and he preached a form of Pantheism. Nanak was born in the Province which then formed the border land between Hinduism and Islam; he was brought up under the shadow of the monotheism of Muhammad, and he taught that there was one God. But that God was neither *Allah* nor *Parmeshar*, but simply God; neither the God of the Musalman nor of the Hindu, but the God of the universe, of all mankind, and of all religions.

Quietist doctrines of Baba Nanak.

648. The burthen of his teaching was, "There is no Hindu and no Musalman." He rejected the wisdom of the Scribes, and the mint and anise and cumin of the Pharisees, and taught that salvation lay in repentance and in pure and righteous conduct. He believed in transmigration, but held that the successive stages were but purifications,

and that at the last the soul cleansed from its sin went to dwell with its Maker. He did not despise or attack the Hindu and Muhammadan teachers. He held, indeed, that they too had been sent from God; but he preached a higher and purer religion, embracing all that was best in both, but purged from much of evil that had been allowed in either because of the hardness of men's hearts. He declared himself a prophet, but he claimed neither direct inspiration nor miraculous powers. He prescribed no caste, rules or ceremonial observances, and indeed condemned them as unnecessary and even harmful. But he made no violent attack on them, he insisted on no alteration in existing civil and social institutions, and was content to leave the doctrine of the equality of all men in the sight of God to work in the minds of his followers. He respected the Hindu veneration of the cow and the Muhammadan abhorrence of the hog, but recommended as a higher rule than either total abstinence from flesh. In short he attacked nothing, he condemned nobody. But he sought to draw men's minds from the shadow to the substance, to glorify what was highest and best in the religion of each, and was content to leave to all men, at least for a while, the outward and visible signs to which each was accustomed, if only he might bring home to their hearts the inward and spiritual grace which the empty form might perhaps conceal and obstruct but not wholly destroy. Nothing could have been more gentle or less aggressive than his doctrine, nothing more unlike the teaching of his great successor, Govind.

Development of Sikhism: compilation of the *Granth* Sahib.

649. Under the second Guru, Angad, an intolerant and ascetic spirit began to spring up among the followers of the new tenets; and had it not been for the good sense and firmness displayed by his successor Amar Das, who excommunicated the Udasis, a Sikh sect of recluses who renounced the world and domestic life under the leadership of Nanak's son, Sri Chand, and re-called his followers to the mildness and tolerance of Nanak, Sikhism would probably have merely added one more to the countless orders of ascestics or devotees which are wholly unrepresented in the life of the people. The fourth Guru, Ram Das, founded Amritsar; but it was his successor, Arjan, who first organised his following. He gave them a written rule of faith in the *Granth* or Sikh Scripture which he compiled;

he provided a common rallying-point in the city of Amritsar which he made their religious centre, and he reduced their voluntary contributions to a systematic levy which accustomed them to discipline and paved the way for further organisation. He was a great trader, he utilised the services and money of his disciples in mercantile transactions which extended far beyond the confines of India, and he thus accumulated wealth for his church.

Political tendencies.

650. Unfortunately, he was unable wholly to abstain from politics; and having become a political partisan of the rebel prince Khusru, he was summoned to Delhi and there imprisoned, and the treatment he received while in confinement hastened if it did not cause his death. And thus began that Muhammadan persecution which was so mightily to change the spirit of the new faith. This was the first turning point in Sikh history, and the effects of the persecution were immediately apparent. Arjan was a priest and a merchant, his successor Har Govind was a warrior. He abandoned the gentle and spiritual teaching of Nanak for the use of arms and the love of adventure. He encouraged his followers to eat flesh, as giving them strength and daring; he substituted zeal in the cause for saintliness of life as the price of salvation; and he developed the organised discipline which Arjan had initiated. But his military proclivities brought him into conflict with Aurangzeb, who captured and executed him as an infidel, a robber, and a rebel, while he persecuted his followers in common with all who did not accept Islam.

Political Sikhism: Guru Govind.

651. Teg Bahadur was succeeded by the last and greatest Guru, his son Govind Singh; and it was under him that what had sprung into existence as a quietist sect of a purely religious nature, and had become a military society, developed into the political organisation which was to rule the whole of North-Western India, and to furnish to the British arms their stoutest and most worthy opponents. For some years after his father's execution Govind Singh lived in retirement, and brooded over his personal wrongs and over the persecutions of Aurangzeb. His soul was filled with the longing for revenge; but he felt the necessity for a larger following and a stronger organisation, and, follow-

ing the example of his Muhammaden enemies, he used his religion as the basis of political power. Emerging from his retirement he preached the *Khalsa*, the '. pure,'' the " elect," the " liberated." He openly attacked all distinctions of caste, and taught the equality of all men who would join him; and instituting a ceremony of initiation, he proclaimed it as the *pahul* or " gate " by which all might enter the society, while he gave to its members the *parshad* or communion as a sacrament of union in which the four castes should eat of one dish. The higher castes murmured and many of them left him, for he taught that the Brahman's thread must be broken, but the lower orders rejoiced and flocked in numbers to his standard. These he inspired with military ardour, with the hope of social freedom and of national independence, and with abhorrence of the hated Muhammadan. He gave them outward signs of their faith in the five K's, the *kes* or unshorn hair, the *kachh* or short drawers, the *kara* or iron bangle, the *khanda* or steel knife, and the *kanga* or comb. He marked the military nature of their calling by the title of Singh or " lion," by the wearing of steel, and by the initiation by sprinkling of water with a two-edged dagger. He gave them a feeling of personal superiority in their abstinence from the unclean tobacco. " They should have one form of initiation, the sprinkling of water by five of the faithful; they should worship the One Invisible God, they should honour the memory of Nanak and his successors, their watchword should be ' Hail Guru! ' but they should revere and bow to nought visible save the *Granth*, the book of their belief. They should bathe from time to time in the pool of Amritsar, their locks should remain unshorn, they should dignify their person, they should be for ever encouraging war, and great should be his merit who fought in the van, who slew the enemy, and who despaired not although overcome." His religious creed was in many respects much the same as that of Nanak; the God, the Guru, and the *Granth* remained unchanged. But while Nanak had substituted holiness of life for vain ceremonies, Govind demanded brave deeds and zealous devotion to the cause as the proof matter of caste observances. They do not wear the hair long or use any of the outward signs of the Singh, nor do of faith. And though he retained the tolerance which his

predecessor had extended to the Hindu gods and worship, and indeed showed a marked inclination in their favour, being himself a votary of Durga, he preached undying hatred against the Musalman persecutors. The religious was entirely eclipsed by the military spirit, and thus for the second time in history a religion became a political power, and for the first time in India a nation arose, embracing in all races and all classes and grades of society, and banded together in the face of a foreign foe. No formal alteration has been made in the Sikh religion since Govind Singh gave it its military shape ; and though changes have taken place they have been merely the natural result of time and external influences.

Contrast between quietist doctrines of Guru Nanak and military propaganda of Guru Govind Singh.

652. It will be seen from the above sketch that Sikhism has assumed two very different forms at different periods of its history, in the tolerant quietist doctrines of Nanak and the military propaganda of Govind Singh. The admission of all castes to equality by Guru Govind disgusted many of the higher classes, who refused to accept his teaching though they remained faithful to the tenets of Baba Nanak, and thus a schism arose in the faith. These two forms are still represented in the Punjab. In strictness the followers of both are Sikhs, a word said to be derived from the same root as the common Hindu term *Sewak*, and meaning nothing more than a disciple; but while the followers of first Guru, or Nanki Sikhs, are *Sikhs*, they are not *Singhs*, which is the title by which the followers of Govind or Govindi Sikhs are distinguished. In common practice, however, it is the latter only who are called Sikhs; it is they only who are ordinarily regarded as such by the unlearned, and are commonly referred to when the word is used; and the vast majority of those who profess only the tenets of Nanak call themselves Hindus, though the more educated of them would explain that they are at the same time Sikhs, though not Singhs. The Nanakpanthi, or, as they are called, *Sajhdari* Sikhs, are distinguished by no outward sign, have no peculiar customs or observances, and though they reverence the *Granth*, and above all the memory of their Guru, have but little to distinguish them from any other Hindu sect except a slight laxity in the matter of caste observances. They do not wear the hair

longer use any of the outward signs of the Singh, nor do they abstain from the use of tobacco; and they are sometimes called *munna* or shaven Sikhs.

Distinguishing marks of the Sikhs of the order of Guru Govind Singh.

653. The Singhs or Sikhs *par excellence*, on the other hand, are easily distinguishable, there being five marks commonly known as the five *kakke* or *k's* which they are bound to carry about their persons; (1) the *kes* or uncut hair and unshaven beard; (2) the *kachh*, or short drawers ending above the knee; (3) the *kara* or iron bangle; (4) the *khanda* or steel knife; and (5) the *kanga* or comb. But it must be understood that a man cannot be born a Sikh. He is born a Hindu, or perhaps a Nanki Sikh, and does not become a Govindi Sikh until he has received the *pahul* or baptism of initiation instituted by Guru Govind. This baptism may not be conferred till the candidate has reached an age of discrimination and remembrance, seven years being fixed as the earliest age. It is often deferred till manhood. There is no fixed ceremonial, but five of the initiated must be present, of whom one should be learned in the faith. Sugar and water are stirred up with a two-edged dagger, the novice repeats after the officiant the articles of his faith, some of the water is sprinkled on him five times with the dagger, and he drinks of it five times from the palm of his hand. He then pronounces the Sikh watchword "Hail Guru!" and promises adherence to his new religion. He must from that date wear the five K's already enumerated, and change the second term of his name to Singh. Women are seldom initiated; when they are, a one-edged dagger is used. Thus of the women and children returned as Sikh, hardly any of the women, none of children under seven years of age, and only such of the older ones as have been initiated, are true Singhs; and it by no means follows that these children will become Sikhs as they grow up. It is quite common to find one brother Hindu and another Sikh. As for the women, Hindus and Sikhs intermarry freely.

The Akalis originally a band of devotees founded by Guru Govind Singh.

654. The genesis of the present Akali movement is vague and obscure. The Nihangs or Akalis were originally a band of devotees founded by Guru Gobind Singh after the siege of Chamkaur. Dark-blue garments and a peculiar head-dress emblematic of the martial charac-

teristics of Sikhism were ordained for them. They were regarded as the custodians of the *Akal Takht* at Amritsar, and the directors of religious ceremonials. Turbulent and fanatical, and addicted to intoxicating drugs, they later on became a constant source of terror to the more peaceable classes of the community. Maharaja Ranjit Singh endeavoured with some success to reduce them to a state of subjection, but for many years they were the most troublesome element in the Khalsa.

The *Gurdwara* movement.

655. Interest in the Akalis revived with the crusade to obtain possession of the Sikh *gurdwaras* for the religious reform party. Many of these *gurdwaras* are mainly Sikh in the old sense, following the principles of Guru Nanak without any insistence on the militant doctrines of Guru Gobind Singh. But all classes of Sikhs and even Hindus seem to have worshipped at all *gurdwaras* without much discrimination. Many of the *gurdwaras* had large grants of land, and the extension of canal irrigation of recent years has greatly enhanced their value. This suddenly acquired wealth has often diverted the *mahants* in possession from the life of austerity to which they should have been devoted, while providing a magnet for the cupidity of others. It has in fact provided both the motive and the justification for their ejectment and replacement by self-constituted reformers, who put forward the additional plea that true Sikhism (after the order of Guru Gobind) was not followed. Similar motives inspired the Protestant Reformers in England to plunder the monasteries; and there, as now in the Punjab, a movement which was religious in its origin rapidly acquired a political character.

Political development of the *Gurdwara* movement.

656. The *Gurdwara* reform movement took definite shape in the summer and autumn of 1920, the first disputed shrines being the *Chomala Gurdwara* in Lahore City and the *Baba ki Ber* at Sialkot. In the former dispute a number of prominent Sikh agitators took part; they wore dark-coloured turbans and carried *kirpans*, as the Sikh sword was denominated, and called themselves Akalis. As the *Gurdwara* movement took shape and developed into an important political issue, the numbers of the Akalis increased and well-defined associations of Akalis began to appear. The movement then aimed at the control of the Khalsa College

and the Golden Temple. The reconstitution of the Council and Managing Committee of the College stilled complaints upon the former subject, but the latter problem was, owing to differences among the Sikh community, less susceptible of solution. After consultation with His Highness the Maharaja of Patiala, a Provincial Advisory Committee was formed to draw up a scheme for the management of the Golden Temple. A large meeting of Sikhs agreed to accept the nominees of Government on the Committee, but the Committee, as contemplated, was still-born, for it merged itself in a larger and self-appointed organisation, known as the Shromani Gurdwara Parbandhak Committee, consisting of 175 members. Religious reform had now become the watchword of the Sikh malcontents. The Shromani Gurdwara Parbandhak Committee declared its intention of obtaining control over all the Sikh *gurdwaras* and other Sikh religious institutions in the Province and of providing for their management. The Akali *dal*, organised by this committee, grew to abnormal porportions and was utilised for the purpose of seizing Sikh shrines and *gurdwaras*. This semi-military body attracted recruits of every stamp, including ex-soldiers, returned emigrants and men of bad character.

Distinctive marks of the modern Akali.

657. The distinctive marks of the modern Akali are the *kirpan* which may be worn of any length at the discretion of the wearer and is often slung on a Sam Browne belt, and the black or dark-blue turban. Black is more in favour as a means of expressing the idea that the Sikh community is in mourning over the Nankana tragedy. Some Akalis also affect black shirts and trousers. Occasionally the turban worn is neither black nor dark-blue, but yellow. The use of *khaddar* by Akalis is becoming general, even turbans being made of this material. In addition to the *kirpan* the militant Akali is often armed with a *lathi* or a *safa jang*. The latter weapon is a long handled battle-axe with a curved blade and is ordinarily used for purposes of display or intimidation. This weapon has no religious significance whatever, but has always been much patronised by the turbulent Jat Sikhs of the Central Punjab.

Early advance of Islam in the Punjab.

658. In striking contrast to Sikhism is the other monotheistic religion of Islam. It is difficult to fix with any approach to certainty the time at which Muhammadanism

first made material progress among the population of the several portions of the Province. The people of the eastern districts generally refer their change of faith to the reign of Aurangzeb, and it is probable that the tradition very nearly expresses the truth. Under the Afghan dynasties, while the great Provincial Governors were always Muhammadan, the local administration would appear to have been in great measure left in the hands of Hindu chiefs who paid tribute and owed allegiance to the Sultan of Delhi. It is tolerably certain that little attempt was made at proselytising under the free-thinking Akbar. It would appear however that during his reign and those of his immediate successors the character of the administration changed considerably, a more direct and centralised control being substituted for an almost purely feudal system. The change gave the people Musalman Governors in the place of Hindus, and must have greatly facilitated the systematic persecution of the infidel which was instituted by Aurangzeb, by far the most fanatical and bigoted, and probably the first who was a bigot among the Emperors of Delhi. The local traditions tell us that in many cases the ancestor of the present Musalman branch of a village community adopted Islam "in order to save the land of the village," and it appears probable that some sort of legal disability was attached or attachable to a Hindu. In some cases the ancestor is said to have been taken as a prisoner or hostage to Delhi, and there circumcised and converted against his will. Since the rise of the Mahratta power there has, of course, been no forcible proselytism; and conversion has been almost unknown within the last few generations, the first Musalman generally dating in the Karnal district at least, from about ten generations back.

Islam in the Western Punjab.

659. On the frontier the spread of Islam was almost certainly of earlier date. Farishta puts the conversion of the Afghan mountaineers of our frontier and of the Gakkhars of the Rawalpindi Division at the beginning of the 13th century, and it is certain that the latter were still Hindus when they assassinated Muhammad Ghori in 1206 A.D. On the lower frontier it is probable that Muhammadan faith was already dominant when, early in the 15th century, the people of Multan voluntarily elected a Qureshi and director of a Muhammadan shrine as their chief, only to be super-

seded at once by the Langah dynasty of Afghans; and when a century later the Baloches spread into the Punjab, they probably found the Indian population already converted to their faith. The people of the Western Plains very generally attribute their conversion to Baha-ul-Haqq of Multan and Baba Farid of Pakpattan, who flourished about the end of the 13th and beginning of the 14th centuries; and whether the tradition be true or no, the renown which to this day attaches to these holy men is of itself a proof that they must have attracted to themselves very numerous followings. Indeed the same may be said of Sakhi Sarwar, who probably lived at least a century earlier.

Islam in the Eastern Punjab.

660. In the eastern portion of the Punjab the faith of Islam in anything like its original purity was till quite lately to be found only among the Saiyads, Pathans, Arabs, and other Musalmans of foreign origin, who are for the most part settled in towns. The so-called Musalmans of the villages were Musalmans in little but name. They practised circumcision, repeated the *kalimah* or Muhammadan profession of faith, and worshipped the village deities. But after the mutiny a great revival took place. Muhammadan priests travelled far and wide through the country preaching the true faith, and calling upon believers to abandon their idolatrous practices. And now almost every village in which Musalmans own any considerable portion has its mosque, often of adobe only, while all the grosser and more open idolatries have been discontinued. But the villager of the East is still a very bad Musalman. A peasant saying his prayers in the field is a sight almost unknown, the fasts are almost universally disregarded, and there is still a very large admixture of Hindu practice. The Musalman of the villages was said to "observe the feasts of both religions and the fasts of neither". And indeed it is hardly possible that it should be otherwise. Conversion was seldom due to conviction, but was either forcible or made under pressure of the fear of confiscation. Thus the change of faith was usually confined to one or two members of the brotherhood; and while it is common to find one branch of a joint village-community Musalmans and the other Hindus, it is perhaps seldom the case except among the Meos of Gurgaon that any considerable group of villages has embraced Islam as a whole. Living then side by side

with their Hindu brethren in the same or the next village, sharing property in the same land, and forming a part of the same family with them, it is impossible that the Musalman converts should not have largely retained their old customs and ideas. The local saints and deities have their shrines even in villages held wholly by Musalmans, and are still regularly worshipped by the majority, though the practice is gradually declining. The women especially are offenders in this way ; and a Musalman mother who had not sacrificed to the small-pox goddess would feel that she had wantonly endangered the life of her child. The Hindu family priests are often kept up and consulted as of old, and Brahmans are often fed on the usual occasions, and in many cases still officiate at weddings and the like side by side with the Muhammadan priests. As for superstitions, as distinct from actual worship, they are wholly untouched by the change of faith, and are common to Hindu and Musalman.

Christianity : The Ecclesiastical Establishment.

661. Christianity owes its importance in the Punjab to the large number of British troops cantoned there. In the ordinary acceptance of the term there is no established Church in India. An Ecclesiastical Establishment is maintained for providing religious ministrations, primarily, to British troops, secondarily to the European civil officials of Government and their families. Seven out of the eleven Anglican Bishops in India are officers of the Establishment, though their episcopal jurisdiction far exceeds the limits of the Ecclesiastical Establishment. This includes four denominations—Anglican, Scottish, Roman and Wesleyan. Of these, the first two enjoy a distinctive position, in that the Chaplains of those denominations (and in the case of the first-named the Bishops) are individually appointed by the Secretary of State and rank as gazetted officers of Government.

The Anglican Church : The Lahore Diocese.

662. As regards the Anglican Church the Punjab is included in the Diocese of Lahore.* The Diocese was founded in the year 1887 as a memorial to Bishop Milman. It consists territorially of an immense tract of country comprising the Provinces of the Punjab (including the enclave of Delhi).

* A list of the Bishops of the Lahore Diocese is given in Appendix II.

the North-West Frontier Province, Sind, and Baluchistan. Though without jurisdiction the Bishop is also responsible for Kashmir, and was until quite recently responsible for the Persian Gulf also. Bishop Valpy French, the first Bishop, was a very remarkable personality: he was one of the greatest scholars who ever came to India, and was known to Indians as the *zaban* padri, the master of seven languages. He tackled the great project of building a Cathedral at Lahore and carried it a very long way towards completion. After ten years' work in the Diocese he resigned the See and, resuming work as a Pioneer Evangelistic Missionary to Muhammadans, died at Muscat. He was followed in the Bishopric by two men of unusual calibre, Bishop Matthew in whom were realised the highest ideals of a Bishop as Pastor and Bishop Lefroy who was a great Church Statesman, and about whom Lord Morley is said to have remarked that he wished he could have made him Lieutenant-Governor of the Punjab.

The Lahore Diocese predominantly military.

663. The Diocese is quite unique in character; it is predominantly a military Diocese, the British Troops within its borders numbering 35,000 officers and men. The Headquarters and practially all the units of the Northern and Western Commands are in the Diocese, and it contains Cantonments which from the point of view of Church ministrations to Troops must be as important as any in the world. Rawalpindi and West Ridge have three full Battalions of British Infantry besides several Batteries of Artillery and large numbers of British Officers in Indian Regiments. There are 36 Government Chaplains mostly working among Troops. The Domiciled Community are not so numerous in the Lahore Diocese as in Madras and Calcutta, but they are strongly represented in Lahore itself where two Railway Chaplains minister to a community numbering three or four thousand.

The Mission of Help.

664. The Church in India has hitherto suffered considerably from the intellectual stagnation which seems to settle over all forms of activity in India. In order to remove this and to bring Indian Church life in contact with the best English thought, the Mission of Help was sent out from England in the cold weather of 1922-23. Though it is too early to judge of results as yet, a good deal has been done to rebut the charge

that the Church was making no effort to keep abreast of the best scientific, philosophical, and religious thought of the times.

The Church and European education

665. The problem of European education has been tackled by the Church with much energy and a fair measure of success (*para.* 450). There are two great Lawrence Schools, one at Sanawar with 250 boys and 250 girls on its rolls, and one at Murree with about 250 boys and 100 girls, both of which are doing invaluable work. The Diocese has a big scheme in hand for building a great girls' school to accommodate 300 girls. It will be on the site of St. Deny's School, Murree. When completed the girls at present in the Lawrence School at Murree will be transferred to this new school leaving room in the Boys' School for a large number of boys already on the waiting list. Auckland House, Simla, recently rebuilt and containing over 100 girls has done first class work in providing education of a high grade for girls most of whom in less stringent times would have been sent to schools in Enlgand. The educational policy of the Diocese, in agreement with that of Government, is to concentrate the education of European children in Hill Schools. In the matter of education of girls the Diocese owes an incalculably great debt to the Society of St. Hilda, a Society of lady workers founded by Bishop Matthew in his Episcopate. At present over 20 very highly qualified ladies are working in the Girls' Schools of the Diocese in connection with this society, and the work that they have done in raising the standard of girls' education is beyond all praise.

Training of teachers.

666. Provision for the training of teachers is made at Sanawar where there is a Training College for men teachers. Church of England girls, who wish for training as teachers, go to the excellent Roman Catholic College at St. Bede's, Simla, where Church of England girls form usually quite half of the number of the students. The arrangement, while in theory not ideal, has so far worked admirably in practice. The training of kindergarten teachers is undertaken at the Church of England School, St. Deny's, Murree, which is also staffed by ladies of St. Hilda's Society.

Missionary work.

667. The Missionary work of the Diocese is chiefly in the hands of the Church Missionary Society though the Cambridge Brotherhood

at Delhi in connection with the S. P. G. has long been established in the Southern Punjab. The S. P. G. also works a Mission at Rawalpindi. The Canadian Church has a small Mission in the Kangra Valley.

Leading Missionaries.

668. The history of Missionary work in the Diocese is rich in great names, and gathers round certain big personalities. Bickersteth and Lefroy of Delhi will long be remembered as devoted men of exceptional powers. Bickersteth broke down in health and having to leave India became Bishop of South Tokyo in Japan. Lefroy as Bishop of Lahore, and ultimately Metropolitan of India, had the joy of Episcopal supervision over the Mission that he so dearly loved, and where he had worked so devotedly for twenty years. There are at least three other Missionaries (all of C. M. S.) who deserve mention and whose influence has passed beyond the individual and affected profoundly the large communities with which each one has been connected. Rowland Bateman worked in the Central Punjab among the Chuhras His School at Narowal has probably a larger roll of converts to Christianity than any other Mission School in India. Quite a large proportion of these converts of his have taken Holy Orders and reached positions of honour and responsibility in the Indian Church. His name is still remembered with veneration among the Punjabi Christians. He died in an English parish. The other two are happily still alive: Canon E. Guilford of Tarn Taran, by 35 years' devoted work, has won a position of influence among the Sikhs. His counsel is eagerly sought by those in authority in the questions that arise in dealing with these difficult but warlike and attractive people. He is also perhaps the greatest authority in the Church in India on the Leper Community. His school for untainted children of Lepers at Tarn Taran and his Leper Asylum at the same place are models of what such institutions should be.

Manliness of the Punjab Christians as compared with those of other provinces.

669. Mass movements in this Diocese can be briefly treated, because no doubt they are similar to those in other parts of India. There are some twenty-five thousand Church of England Christians, mostly in the Canal Colonies in this Diocese. The Bishop of Madras when he made a tour here, as Acting Metropolitan, professed himself as profoundly impressed by the greater virility of the Christians here as compared with his own people. This is

probably the chief distinguishing feature of this mass movement work in the Punjab. The people among whom work is carried on are *men*. They are by no means perfect as yet, but the future is full of hope, because there is real stuff on which to work.

Necessity for subdivision of the Diocese.

670. To sum up, the Diocese sorely needs to be divided in the interests of efficiency. It is far too big for supervision by one Bishop. But anybody who has had charge of it, as it stands, has had a sphere, which, for interest and fascination, must be unique in the Church in the Empire.

Legal constitution of the Lahore Diocese.

671. The See of Lahore as constituted by Letters Patent includes the Punjab, the North-West Frontier Province, and the Province of Sind, which was formerly a part of the Bombay Diocese. The Bishop also exercises Ecclesiastical jurisdiction in Kashmir and in the Persian Gulf. With the extension of British military occupation on the South-West Frontier the Ecclesiastical jurisdiction of the Bishop has also extended to Quetta and other places in Southern Baluchistan occupied by British troops. Like all other Indian Sees, the Lahore See is subject to the authority of the Bishop of Calcutta as Metropolitan. By authorization of the Letters Patent two Archdeacons are appointed by the Bishop ; one, with the title Archdeacon of Lahore, from among the Senior Chaplains, who exercises Archidiaconal jurisdiction within the limits defined above ; the other, with the title Archdeacon of Delhi, appointed specially to supervise and stimulate the work among the Indian congregations of the diocese.

Lahore Cathedral.

672. The interior of the Lahore Cathedral was completed in 1892. The two western towers were completed in 1913 at a cost of about Rs. 60,000. A further proposal to extend the nave westwards by the addition of two bays, at an estimated cost of about another Rs. 70,000, has been accepted by the Diocesan Conference and the Cathedral Vestry, but for this addition funds have not yet been raised.

Church of England Institutions.

673. The following are the principal Educational Institutions in the Punjab which are Diocesan, or in which the religious teaching is that of the Church of England :—(1) Lahore Divinity College, Church Missionary Society.

(2) The Lawrence Royal Military School, Sanawar (Simla Hills). (3) The Lawrence School, Ghora Gali, Murree. (4) Bishop Cotton's School, Simla. (5) Auckland House School, Simla. (6) The Mayo Orphanage and School for girls, Simla. (7) Christ Church Schools at Simla. (8) St. Deny's School for girls at Murree. (9) The Cathedral Orphanages at Lahore. (10) Cathedral School for boys and for girls at Lahore. (11) Indian Christian Boys' Schools —Baring High School, Batala (Gurdaspur), Vernacular Middle School, Clarkabad (Lahore). (12) Indian Christian Girls' School—Alexandra High School, Amritsar, Middle School, Amritsar, Primary Schools at Clarkabad, Narowal (Sialkot) and Ajnala (Amritsar). (13) Boys' Mission Schools at Multan, Bahawalpur, Amritsar, Majitha (Amritsar), Batala, Fatehgarh (Gurdaspur), Narowal, and Kotgarh (Simla). (14) Girls' Mission Schools at Amritsar, Jandiala (Amritsar) and other places.

The Church Missionary Society.

674. The Church Missionary Society began work in the Diocese of Lahore in 1851 on the arrival of the late Rev. Robert Clark, M.A., who completed almost 50 years of work in the country. Geographically its Missions may be divided into three sections,—(*a*) those of the Central Punjab, with main stations at Lahore, Amritsar, Tarn Taran, Batala, Narowal, Ajnala, Asrapur (Amritsar), Clarkabad, Gojra, Toba Tek Singh and Multan: (*b*) the long Frontier line comprising Simla and Kotgarh ; Islamabad and Srinagar ; Peshawar, Bannu, Tank, Dera Ismail Khan and Sakhi Sarwar ; Quetta and the Kelat country : (*c*) the Sind stations of Shikarpur, Sukkur, Hyderabad and Karachi. The European Missionaries, including those on furlough, consist of 18 Clergymen, 8 men and 4 women Doctors, 11 Nurses, and 25 other lay missionaries (3 men, 22 women) ; and there are besides 20 Indian Clergymen and 8 Indian Doctors, as well as a considerable staff of Catechists, School Teachers and Hospital workers. The work is mainly of three kinds, *viz.*, (1) in connection with the Mass Movement towards Christianity in the villages of the Central Punjab, notably around Batala, Narowal and Clarkabad, and in the Chenab and Chunian Colonies ; (2) Medical, including seven main hospitals for men and women combined, and 2 for women only : these are all on the frontier line of Missions, except those at Amritsar, Multan and Narowal : (3) Educational, including the Divinity School

at Lahore, a first grade College at Peshawar, 9 High Schools, 6 Middle Schools, besides Village Schools.

Church of England Zenana Missionary Society.

675. The Church of England Zenana Missionary Society has stations in the diocese of Lahore at Amritsar, Tarn Taran, Jandiala, Batala, Narowal, Ajnala, and Asrapur (Amritsar), and Majitha. In every one of these it has a women's hospital or dispensary, and in most of them girls' schools also, while women are visited and taught in their homes both in cities and villages. The chief educational centres are Amritsar, Batala and Narowal.

Zenana Bible and Medical Mission.

676. The Zenana Bible and Medical Mission has stations at Lahore and Kasur in Lahore district and employs at these places ten Missionaries or Assistant Missionaries. There are schools in both stations—the Kinnaird High School at Lahore having an attendance of 162 girls.

Society for the Propagation of the Gospel Mission.

677. The Society for the Propagation of the Gospel has a Mission in the South of the Punjab, with its head-quarters at Delhi, and branches in Karnal, Gurgaon, Rewari (Gurgaon) and Mahrauli (Delhi). It was founded in 1852, and has an extensive organization in various departments of Mission work, both Medical, Educational, and Evangelistic. It has three well-equipped Zenana Hospitals, in Delhi, Karnal and Rewari, respectively; the Karnal hospital work is, however, at present suspended. It has a staff of 28 European lady workers, of whom 10 are medical and the rest have charge of Schools or are engaged in Zenana work in Delhi and the outstations of the Mission.

Cambridge Mission.

678. Allied with the S. P. G. Mission is the Cambridge Mission, which has undertaken the chief part of the male work of the district. It has 8 ordained and 5 other lay European Missionaries. It has a College affiliated to the Punjab University, and teaching up to the M.A. degree examinations. It numbers 260 students, over 90 of whom live in hostels connected with the College. The Mission has also charge of a large Mission School with 850 boys. Grants-in-aid from Government are received for all the Medical and Educational institutions of the Mission. The Cambridge Mission has also a branch at Rohtak for

work among the Jats and other villagers of the district, and a number of small congregations of Christians among the Chamars in the Delhi province and the Gurgaon district.

Church of Scotland.

679. The Punjab forms part of one of the six Presbyteries, by which the Church of Scotland is represented in India, the whole Presbytery comprising the Punjab, the North-West Frontier Province, Jammu and Chamba. Each Presbytery consists of all the ministers of the Church of Scotland who hold appointments of the Church within its bounds and one elder sent by each Kirk Session, within the same bounds. There are three duly constituted Kirk Sessions, *viz.*, Lahore, Simla and Rawalpindi-Murree. The Presbytery meets at various centres to transact business connected with the Church. Scottish regiments are usually accompanied by their own Chaplain, who acts as the Chaplain of the station, while the regiment remains, the other Chaplain, if there is one, being for the time sent elsewhere. At the present time there are 3 Scottish regiments within the bounds of the Presbytery of the Punjab and North-West Frontier Province. The Chaplaincy work of the Punjab is under the direction of the Presidency Senior Chaplain of Bengal, Calcutta.

Church of Scotland Mission.

680. The Church of Scotland Punjab Mission was founded in 1857 and carries on work at Sialkot, Jammu, Gujrat, Wazirabad, Daska, Chamba and Jalalpur. The work is evangelical, educational and medical. There are 5 missionaries, 1 medical missionary and 3 European educational missionaries. Mission work is also carried on by the Church of Scotland Women's Association for Foreign Missions at Gujrat, Sialkot, Chamba and Daska. There are 14 lady missionaries and a number of native teachers and assistants.

Roman Catholic Church jurisdiction.

681. Portions of the Province are included in the Roman Catholic Metropolitan See of Simla, the Archdiocese of Agra, the Diocese of Lahore and the Prefecture Apostolic of Kashmir and Kafiristan. The Roman Catholic Chaplains are not paid by the State, but grants-in-aid are given to the Church in cantonments according to the established strength of British Troops in the Station.

682. The Vicariate Apostolic of Hindustan, with its Episcopal See at Agra, was constituted an Archdiocese by the Holy See on September 1st, 1886. Originally embracing the whole Punjab, the Diocese now includes the Province of Delhi only, with a Chaplain at Delhi.

Archdiocese of Agra.

683. In 1880 the portion of the Punjab extending northwards from the River Sutlej (inclusive of Ferozepore) was formed into a Vicariate separate from that of Hindustan, and the Right Reverend Dr. P. Tosi was appointed Bishop and Vicar-Apostolic of the Punjab. In 1886 the Vicariate was constituted...a Diocese under the title of the Diocese of Lahore. The Diocese of Lahore on the north extends up to the districts of Bannu, Kohat, Jhelum and Attock, and the State of Kashmir, and includes the Native State of Chamba. On the west it extends to the confines of Afghanistan and Baluchistan, comprising the Punjab districts of Muzaffargarh, Dera Ghazi Khan and Mianwali and the Native State of Bahawalpur. It has for its southern limits Rajputana and the Diocese of Simla, and extends as far as the boundaries of the Patiala State and the Ambala district. On the east it comprises the district of Kangra, exclusive of the Kulu sub-division. The first Bishop of the Diocese of Lahore was Dr. Symphorien Mouard, consecrated in 1886. On his death in 1890 Dr. Vanden Bosch became Bishop in 1891 and was transferred to Agra in 1892. Dr. Godfrey Pelckmans was consecrated on the 13th August 1893 at Simla by Dr. Vanden Bosch. Dr. Pelckmans died in 1904, and was succeeded by the present Bishop, Dr. Fabian Eestermans, who was consecrated at Antwerp in 1905.

Diocese of Lahore.

684. The Prefecture Apostolic of Kashmir and Kafiristan was erected as a separate Ecclesiastical charge by the Holy See on the 6th July 1887. It comprises the Punjab districts of Rawalpindi, Jhelum and Attock. The Prefect Apostolic appoints Military Chaplains to Rawalpindi, West Ridge, Murree and the Murree Gallies. Besides these Chaplains, the Prefecture maintains additional Chaplains, who receive no grant or allowances from Government,—one at Rawalpindi for Railway employés, and, during the summer season, one for the Military Camps near Murree.

Prefecture Apostolic of Kashmir and Kafiristan.

Roman Catholic Archdiocese of Simla.

685. On September 13th, 1910, the Archdiocese and Metropolitan See of Simla was erected by the Holy See. It was formed by separating certain districts from the Archdiocese of Agra and from the Diocese of Lahore respectively. From Agra the new Archdiocese received the districts of Simla, Ambala, Hissar and Karnal ; and the States of Loharu, Maler Kotla, Jind, Nabha and Patiäla ; from Lahore the sub-division of Kulu, with Lahul and Spiti, and the States of Mandi and Suket. The first Archbishop and the Metropolitan is the Most Revd. E. A. J. Kenealy, D. D., who was consecrated in Rome on January 1st, 1911, by Cardinal Gotti, assisted by the Archbishop of Westminister and Archbishop Jacquet. The Suffragans of the Metropolitan See of Simla are the Diocesan of Lahore and the Prefect Apostolic of Kashmir and Kafiristan. The Archbishop of Simla appoints a Civil Chaplain to Simla, also Military Chaplains to Ambala, Dagshai, Jutogh, Kasauli, Solon and Subathu in the Simla Hills.

Roman Catholic Institutions.

686. The Educational Institutions of the Roman Catholic Church in the Punjab are :—(*i*) in the Simla Archdiocese—(1) Convent of Jesus and Mary, Chelsea, Simla ; (2) St. Aloysius' Boarding School, for young ladies ; (3) St. Francis' Military Orphanage, Simla, for European girls ; (4) St. Bede's College for the training of School Teachers; (5) Loretto Convent at Tara Hill, Simla—Boarding School for young ladies, conducted by the Nuns of the Institute of the Blessed Virgin Mary ; (6) St. Joseph's Day School, by the same Nuns, for girls and also for boys up to 8 years of age : (*ii*) in the Lahore Diocese—(1) St. Anthony's High School for European boys at Lahore ; (2) St. Francis' Orphanage for Indian boys at Lahore ; (3) the Convent School of the Congregation of Jesus and Mary, for European girls at Lahore ; (4) (*a*) the Sacred Heart College for Indian girls at Lahore, (*b*) St. Joseph's Orphanage for Indian girls at Lahore ; (5) a High School at Dalwal, Jhelum district ; (6) St. Mary's Convent School for boys and girls at Multan ; (7) the Convent School at Sialkot ; (8) the Convent of the Sacred Heart at Dalhousie, for boys and girls ; (9) two Convents of Nuns of the Order of Jesus and Mary at Sialkot and Lahore ; (10) four Convents of the Congregation of Charity at Lahore, Multan, Dalhousie and Khushpur

(Lyallpur); (11) two Convents of the Franciscan Nuns at Lahore in charge of the Punjab Female Asylum, and at Maryabad. Besides these there are elementary schools for Indian children of both sexes at Khushpur, Adah, Sahowala, Matyabad and Jamki (Sialkot), containing in all more than 500 scholars.

The Wesleyan Church.

687. The Wesleyan Methodist Church in the Punjab is administered by the General Superintendent, Bombay and Punjab District, at Simla. Churches have been built at Rawalpindi, West Ridge, Sialkot, Lahore, Ferozepore and Ambala and there are soldiers' homes at the two last-named places. Chaplains are stationed at Rawalpindi, Lahore, Simla, and Sabathu and there is also an acting Chaplain at Dalhousie during the hot weather. Wesleyan troops in other stations are regularly visited and ministered to. The Church has no vernacular work in the Punjab, its ministry being confined to British troops and civilians; but the Wesleyan Chaplains also minister to the Baptists and Congregationalists in all stations except Kasauli and Dagshai, as a Baptist Chaplain is stationed at Kasauli.

The Baptist Mission.

688. The London Baptist Missionary Society opened its first station in the Punjab, at Delhi, in the year 1818. At the present time it has stations also at Simla, Kasauli, Kalka, Kharar, Bhiwani and Palwal. There is a High School for Boys at Kharar, Ambala; a High School for Girls at Delhi; and some 35 Middle and Upper Primary and Kindergarten Schools. The Higher Education of its students is carried on in co-operation with the Cambridge Mission, and the St. Stephen's College in Delhi; there being Baptist Hostels there for both Christian and Non-Christian students. There are two hospitals at Palwal, each with two European Doctors in charge, one for men and the other for women. There are also women's hospital at Bhiwani, with three doctors; and a number of dispensaries in the main and the substations. There are some 40 or more European Missionaries in the Baptist Mission Stations of the Punjab, and the whole Christian Community connected with the Mission numbers about 4,000.

The Salvation Army.

689. The work of the Salvation Army is under the direction of Commissioner E. Hoe, the headquarters for the force for the Punjab

and United Provinces being now in Lahore, with responsibility direct to the London International Headquarters. Operations began in the Punjab about 20 years ago, and the Army has now more than 250 Officers working under its direction in this Province. The aims of the Salvation Army, in addition to its wide religious propaganda, are chiefly directed to the reformation and the regeneration of Criminals and other Depressed Classes, as well as the improvement of various village industries. In carrying out this policy, Weaving Schools have been formed in Lahore and Ludhiana. Settlements for Criminal Tribes, partly industrial and partly agricultural, have been established at Kot Adhian (Sheikhupura), Changa Manga (Lahore), Kassowal (Montgomery), and Ani (Kulu). A large and flourishing village has also been established near Khanewal, where Salvationists of the poorer classes have the opportunity of purchasing holdings of land on easy instalments, under skilled and sympathetic oversight.

Methodist Episcopal Mission.

690. In March 1881 the Methodist Episcopal Church was established in Lahore and a Church, built out of voluntary contributions and a subsidy from the Board of Foreign Missions in America, was dedicated on May 29th, 1884. In 1891 a station was established at Delhi and in 1898 at Hissar, and missionaries are resident in these three places only. The work in English has been taken over by the Wesleyan Chaplains. In 1902 the Church commenced a forward movement along vernacular lines and at present there are 275 male and 240 female workers, carrying on work in Lahore, Gurdaspur, Multan, Muzaffargarh, Jhang, Ferozepore, Karnal, Hissar district, Delhi Province, and also in several Native States. The Mission supports a boarding school for boys and one for girls in Lahore and also a boys' school in Sonepat near Delhi. The Boys' Boarding School at present located in Lahore is to be moved shortly to Raewind at which time the missionary in charge of educational work will take up his residence at that station. Bishop J. W. Robinson, D. D. resident in Bombay, is the Bishop in charge of this work.

American Presbyterian Mission.

691. The American Presbyterian Church began operations in the Punjab in 1834, its first station being Ludhiana. In 1849 Messrs. Newton and Forman began work in

Lahore. The following stations and districts in the Punjab are occupied by the Mission :—Ludhiana, Khanna and Jagraon (Ludhiana district), Lahore, Sharakpur and Kasur, Ferozepore, Jullundur, Hoshiarpur and Ambala. Santokh Majra is in charge of an itinerant Missionary. There are in connection with the Mission 30 ordained foreign Missionaries and 7 Medical Missionaries, of whom 6 are ladies. There are, in addition to the above, 33 lady Missionaries, and 34 ordained Native Ministers are connected with the Mission. The Mission's Forman Christian College at Lahore teaches up to the M.A. and M. Sc. Standard of the Punjab University, and has over 900 students in attendance. This institution receives a grant from Government. It has also important educational work in the Boys' Boarding School at Ludhiana and the Girls' School at Hoshiarpur for the benefit of the Indian Christian community. In addition to these there are High Schools for the general public at Lahore, Jullundur and Ambala.

American United Presbyterian Mission.

692. The Sialkot Mission of the United Presbyterian Church of North America was established at Sialkot in 1855 by the Reverend Andrew Gordon. It consists at present of 24 ordained men, most of whom are married, with their wives, one layman and wife, one male physician and wife, three female physicians and 40 unmarried ladies. The stations are at Gujranwala, Khangah Dogran and Sangla (Gujranwala), Gurdaspur and Pathankot (Gurdaspur), Sialkot, Pasrur and Zafarwal (Sialkot), Sargodha (Shahpur), Jhelum and Rawalpindi. Educational work is carried on in 204 schools of which two,—one for boys at Gujranwala and one for girls at Pasrur,—are Industrial ; 190 are primary, mostly indigenous, 181 for boys to which girls too are admitted and 9 for girls ; 8 middle, 5 for boys and 3 for girls ; and 4 high, 3 for boys and 1 for girls. In addition to these are the Gordon Mission College at Rawalpindi, affiliated to the Punjab University for the B.A. and B.Sc. classes, and the Theological Seminary at Gujranwala which aims at the training of religious leaders. There is a general hospital at Sargodha and female hospitals at Jhelum, Pasrur and Sialkot. In connection with each of these is a dispensary, and there are also dispensaries at Bhera and Malakwal (Shahpur) and at Kala (Jhelum).

CHAPTER XX.

CIVIL DIVISIONS OF BRITISH TERRITORY.

The Delhi Territory and the Feudatory States.

693. The first acquisition of territory, which now forms part of the Punjab, resulted from Lord Lake's Mahratta campaign and the treaty of Sarji-Anjangam (December 30, 1803). The territory acquired was the country on the right bank of the Jumna, and is comprised in the present districts of Gurgaon, Rohtak, Karnal, Hissar. The country was at first under the general political control of the North-Western Provinces. It was then the policy to make the Jumna the frontier, and to provide for the districts beyond by granting them to great chiefs who were to receive the revenue, and be responsible for the administration. The plan failed; and after some years under the North-Western Provinces government, the events of the Mutiny compelled the transfer of the districts (1858) to the Punjab. The next important occurrence was the Protection treaty of 1809 with the chiefs on this side (*i.e.*, the side nearest the British capital) of the Sutlej. The chiefs became alarmed by the incursions of Ranjit Singh, who indeed in 1806 advanced as far as the British cantonment at Karnal. The greater chiefs have since been confirmed as feudatory princes (Faridkot, Patiala, Jind, Nabha, and the minor States of Maler Kotla and Kalsia), the others became *jagirdars* or smaller chiefs to whom the revenue of the territory was granted. Some of the States have since lapsed from failure of heirs, *e.g.*, part of Jind in 1834, Kaithal (now part of Karnal district) in 1843, and Thanesar in 1850. In 1845 the Ladwa State was forfeited for rebellion, and now forms part of Karnal district.

Administrative divisions of the Cis-Sutlej Territory.

694. Direct control in the Delhi Territory was exercised at first by the Resident at Delhi, but the constantly increasing area to be administered led in 1819 to the formation of four "divisions" under Principal Assistant Commissioners, who exercised executive control under the orders of the Resident. These four divisions were the beginnings of the present districts of Delhi, Rohtak, Gurgaon and Hissar. Panipat (now Karnal) was separately established in 1824, and in 1832 these five districts were brought under the Regulations and included in the North-Western Provinces, with which they remained for 26 years. One of the results of this develop-

ment of the administration was the closer attention paid to affairs in Bhattiana. After a long boundary contention with Patiala the British Government asserted its supremacy over the country upon which encroachment had been made, and a separate district of Bhattiana was established about 1837, subsequently becoming part of the later Sirsa district. These six districts were grouped for administrative purposes into the Delhi and Hissar divisions. Things so remained till Ranjit Singh's death, and some years afterwards, when the Darbar (or Sikh Court) was foolishly moved to interfere on the other side of the Sutlej ; this led to the first Sikh War, and the annexation of the cis-Sutlej districts, Ferozepore, Ludhiana, Ambala, as well as (for security) the districts of Jullundur, Hoshiarpur, and Kangra, which were trans-Sutlej, or between the Sutlej and the Beas Rivers. A British Resident was appointed to aid the Darbar in administering the Punjab to the north-west of the Beas River ; but a second Sikh war broke out, and, in 1849, Lord Dalhousie very reluctantly annexed the whole.

Administrative divisions after annexation.

695. The Province was not attached to any Presidency, but simply annexed to the British dominion. It was divided into seven divisions in charge of Commissioners, with headquarters at Ambala, Jullundur, Amritsar, Lahore, Multan, Rawalpindi and Leiah (Derajat), embracing 24 districts. These districts were Thanesar, Ambala, Simla, Kangra, Hoshiarpur, Jullundur, Ferozepore, Pakpattan (1852 Gugera, 1865 Montgomery), Lahore, Amritsar, Batala (1852 Gurdaspur), Wazirabad (1852 Gujranwala), Gujrat, Shahpur, Rawalpindi, Leiah (1861 Bannu), Dera Ismail Khan, Jhang, Multan, Khangarh (1861 Muzaffargarh), Dera Ghazi Khan and in 1852 Sialkot. The three additional districts of Peshawar, Kohat and Hazara, at first administered under the direct control of the Board, were formed into an eighth division about the year 1850. In February 1858 the divisions of Delhi and Hissar were formally incorporated in the province of the Punjab, adding six to the twenty-seven original districts. The Thanesar district, however, was broken up in 1862, and divided between Ambala and Karnal (Panipat). The division of the Province into ten divisions and thirty-two districts continued for 22 years unchanged. In 1884, how-

ever, Commissioners were relieved of Civil work, the ten Commissionerships were reduced to six, those of Hissar, Ambala, Amritsar and Multan ceasing to exist ; the districts of which they were composed being apportioned between the divisions of Delhi, Jullundur, Lahore, Rawalpindi and the Derajat. The Sirsa district was abolished and divided between the districts of Hissar and Ferozepore. The creation of a new administration (the North-West Frontier Province) for the management of the political affairs of the North-West Frontier was proclaimed on the 25th October 1901. Under this proclamation the districts of Hazara, Peshawar and Kohat, the Bannu and Marwat *tahsils* of Bannu district, and the Tank, Kulachi and Dera Ismail Khan *tahsils* of Dera Ismail Khan district, with a total area of 13,077 square miles, ceased to form part of the provinces. The districts of Lyallpur and Attock were constituted in 1904.

Transfer of the Delhi Province from the Punjab.

696. Apart from a few unimportant transfers due to riverain action between the United Provinces and the Karnal and Gurgaon districts of the Punjab there has been only one change in the boundaries of the Province since then. But that was a most important one. In 1911 it was decided to move the Imperial Capital to Delhi and the district was remodelled and placed under a separate local government as a separate province in the following year. The present province of Delhi bears little relation to the old Punjab district of that name; that district consisted of three *tahsils*—Delhi, Sonepat and Ballabgarh. At the time of separation the *tahsil* of Sonepat with an area of 448 square miles was transferred bodily to the Rohtak district, whilst an area of 280 square miles from Ballabgarh *tahsil* was transferred to the Gurgoan district. The major portion of the old district therefore remained in the Punjab and only the Delhi *tahsil* and a small portion of the Ballabgarh *tahsil* went to the new province. Later on the Delhi Province was enlarged by the addition of some 46 square miles from the Meerut district of the United Provinces, and was thus brought to its present size of 593 square miles. In 1919 the Sheikhupura district was created out of parts of the Lahore and Gujranwala districts, some subsidiary transfers from Sialkot to Gujranwala taking place at the same time.

697. The present arrangement of the Province for administrative purposes is as follows:—

Present administrative divisions.

Division.	Tahsil.	Area in square miles.	Number of		Number of occupied houses.	Population.		Percentage of variation.		Number of persons per square mile in 1921.
			Towns.	Villages.		1921.	1911.	1911 to 1921.	1901 to 1911.	
1	2	3	4	5	6	7	8	9	10	11
	PUNJAB	115,828	186	45,222	5,532,305	25,101,060	23,791,367	+5·5	—2·4	217
	BRITISH TERRITORY ..	91,776	146	34,119	4,550,537	20,685,024	19,578,573	+5·7	—1·8	225
	HISSAR DISTRICT ..	5,185	4	961	169,458	816,810	804,889	+1·5	+3·0	158
	Hissar	813	1	135	28,433	136,272	126,808	+7·5	—1·5	168
	Hansi	803	1	131	37,345	177,043	167,963	+5·4	—6·1	220
	Bhiwani	752	1	130	25,312	126,015	119,081	+5·8	—4·3	168
	Fatehabad	1,177	..	259	39,854	195,801	199,934	—2·1	+4·8	166
Ambala ..	Sirsa	1,640	1	306	38,514	181,679	191,103	—4·9	+20·5	111
	ROHTAK DISTRICT ..	2,246	7	722	158,388	772,272	714,834	+8·0	—14·3	344
	Rohtak	517	1	125	39,266	200,939	178,350	+12·7	—13·2	389
	Jhajjar	728	3	254	43,192	213,866	202,028	+5·9	—8·8	294
	Gohana	553	2	117	36,759	175,291	161,111	+8·8	—20·9	317
	Sonepat	448	1	226	39,171	182,176	173,345	+5·1	—14·8	407

Division.	Tahsil.	Area in square miles	Number of		Number of occupied houses.	Population.		Percentage of variation.		Number of persons per square mile in 1921.
			Towns.	Villages.		1921.	1911.	1911 to 1921.	1901 to 1911.	
1	2	3	4	5	6	7	8	9	10	11
Ambala—*concld.*	**GURGAON DISTRICT** ..	**2,217**	**8**	**1,349**	**155,177**	**682,003**	**729,827**	**—6·6**	**—13·4**	**308**
	Gurgaon	411	2	211	24,620	111,980	112,312	—·3	—10·7	272
	Firozpur-Jhirka ..	314	1	230	23,003	98,285	114,598	—14·2	—13·4	313
	Nuh	401	..	260	25,634	112,119	128,599	—12·8	—11·9	280
	Palwal	382	2	187	30,765	131,760	136,572	—3·5	—20·9	345
	Rewari	423	1	288	32,035	147,256	151,096	—2·5	—10·9	348
	Ballabgarh	286	2	173	19,120	80,603	86,650	—7·0	—10·0	282
	KARNAL DISTRICT ..	**3,146**	**5**	**1,390**	**190,088**	**828,726**	**801,013**	**+3·5**	**—9·5**	**263**
	Karnal	856	1	386	54,256	232,607	226,739	+2·6	—9·2	272
	Panipat ..	460	1	173	39,587	173,796	171,579	+1·3	—12·7	378
	Kaithal	1,273	1	412	61,078	275,722	250,917	+9·9	—5·4	217
	Thanesar	557	2	419	35,167	146,601	151,778	—3·4	—12·4	263
	AMBALA DISTRICT ..	**1,870**	**8**	**1,712**	**167,587**	**681,477**	**690,854**	**—1·4**	**—15·4**	**364**
	Ambala	369	1	291	47,033	187,926	195,385	—3·8	—10·4	509
	Kharar	373	3	370	34,897	142,894	134,167	+6·5	—19·7	383
	Jagadhri	405	3	373	31,150	126,794	140,299	—9·7	—13·0	313
	Naraingarh	436	..	318	26,120	107,798	112,447	—4·1	—14·2	247
	Rupar	287	1	360	28,387	116,155	108,556	+7·0	—22·1	405
	SIMLA DISTRICT ..	**81**	**3**	**206**	**10,649**	**45,327**	**38,436**	**+17·9**	**—2·6**	**560**
	Simla	49	3	95	8,505	35,003	27,593	+26·9	—4·1	714
	Kot Khai	32	..	111	2,144	10,324	10,843	—4·8	+1·5	323

JULLUNDUR ..	KANGRA DISTRICT ..	3,884	1	713	174,423	766,065	770,386	—·6	+·3	197
	Kangra	422	1	133	26,923	118,374	119,628	—1·0	—5·3	281
	Dehra	495	..	145	29,827	124,638	126,525	—1·5	+·8	252
	Nurpur	519	..	191	21,401	95,470	100,041	—4·6	—2·2	184
	Hamirpur	590	..	64	38,942	168,504	166,701	+1·1	+3·3	286
	Palampur	523	..	113	31,033	137,052	132,688	+3·3	—·2	262
	Kulu	1,335	..	67	26,297	122,027	124,803	—2·2	+4·4	91
	HOSHIARPUR DISTRICT.	2,211	3	2,118	226,060	927,419	918,569	+1·0	—7·2	419
	Hoshiarpur	509	2	485	59,437	247,196	241,033	+2·6	—8·7	486
	Dasuya	501	1	632	50,924	215,600	208,865	+3·2	—12·6	430
	Garhshankar	511	..	477	58,808	232,772	236,814	—1·7	—9·4	456
	Una	690	..	524	56,891	231,851	231,857	—·0	+3·0	336
	JULLUNDUR DISTRICT.	1,342	8	1,221	188,174	822,544	801,920	+2·6	—12·6	613
	Jullundur	390	2	405	66,681	289,396	278,101	+4·1	—9·1	742
	Nawashar	299	3	276	42,129	177,692	170,738	+4·0	—13·0	594
	Phillaur	289	2	221	36,415	164,806	163,248	+·9	—15·3	570
	Nakodar	364	1	319	42,949	190,650	189,833	+·4	—14·6	524
	LUDHIANA DISTRICT	1,394	3	859	130,915	567,622	517,192	+9·8	—23·2	407
	Ludhiana	685	1	432	66,212	285,953	258,367	+10·7	—22·5	417
	Jagraon	419	2	167	36,943	164,553	146,659	+12·2	—20·6	393
	Samrala	290	..	260	27,760	117,116	112,166	+4·4	—27·6	404
	FEROZEPORE DISTRICT.	4,068	8	1,499	227,786	1,098,248	959,657	—14·4	+·3	270
	Ferozepore	675	1	361	49,325	221,737	204,285	+8·5	—1·0	328
	Zira	495	2	338	36,528	166,373	155,695	+6·9	—11·8	336
	Moga	625	1	166	46,113	209,558	190,703	+9·9	—9·0	335
	Muktsar	934	2	319	42,134	209,645	180,046	+16·4	+4·4	224
	Fazilka	1,339	2	315	53,686	290,935	228,928	+27·1	+16·5	217

Division.	Tahsil.	Area in square miles.	Number of		Number of occupied houses.	Population.		Percentage of variation.		Number of persons per square mile in 1921.
			Towns.	Villages.		1921.	1911.	1911 to 1921.	1901 to 1911.	
1	2	3	4	5	6	7	8	9	10	11
Lahore ..	LAHORE DISTRICT ..	2,607	7	1,123	241,850	1,131,336	1,000,855	+13·0	—·4	434
	Lahore	662	3	321	109,214	515,613	437,579	+17·8	—1·7	779
	Chunian	1,131	1	467	62,915	295,509	274,021	+7·8	+10·4	261
	Kasur	*814*	*3*	*335*	*69,721*	*320,214*	289,255	+10·7	—7·2	393
	AMRITSAR DISTRICT	1,560	5	1,036	205,546	929,374	880,796	+5·5	—14·0	596
	Amritsar	546	4	368	101,443	450,760	425,304	+6·0	—12·9	826
	Tarn Taran	597	1	340	64,780	294,465	271,970	+8·3	—16·5	493
	Ajnala	417	..	328	39,323	184,149	183,522	+·3	—12·6	442
	GURDASPUR DISTRICT	1,827	9	2,243	182,958	852,192	836,771	+1·8	—11·0	466
	Gurdaspur	497	2	661	49,998	234,146	224,515	+4·3	—13·1	471
	Batala	477	2	480	57,747	275,695	269,706	+2·2	—11·8	578
	Pathankot	367	5	400	29,608	129,502	132,103	—2·0	—6·7	353
	Shakargarh	486	..	702	45,605	212,849	210,447	+1·1	—10·2	438
	SIALKOT DISTRICT ..	1,788	4	2,209	195,413	937,825	931,181	+·7	—6·6	525
	Sialkot	428	1	642	59,233	290,469	283,489	+2·5	—0·3	679
	Pasrur	285	1	376	29,659	140,788	148,758	—5·4	+9·6	494
	Zafarwal	307	..	483	33,899	158,936	156,930	+1·3	—12·3	518
	Raya	484	..	452	41,131	196,936	194,207	+1·4	+1·0	407
	Daska	284	2	256	31,491	150,694	147,797	+2·0	+16·6	531

LAHORE—*concld.*	GUJRANWALA DISTRICT.	2,302	5	1,216	135,593	623,581	605,582	+3·0	—18·1	271
	Gujranwala	936	2	564	63,834	294,567	266,656	+10·5	—21·5	315
	Wazirabad	458	2	252	32,261	146,248	148,998	—1·8	—18·7	319
	Hafizabad	908	1	400	39,498	182,766	189,928	—3·8	—12·3	201
	SHEIKHUPURA DISTRICT.	1,908	3	913	104,978	523,135	436,463	+19·9	+1·8	274
	Khangah Dogran ..	880	1	253	51,715	267,674	222,535	+20·3	—6·4	304
	Sharakpur	1,028	2	660	53,263	255,461	213,928	+19·4	+12·0	249
RAWALPINDI ..	GUJRAT DISTRICT ..	2,278	4	1,436	191,137	824,046	787,999	+4·6	—·5	362
	Gujrat	570	3	508	67,417	295,551	304,778	—3·0	—1·6	519
	Kharian	671	1	508	60,819	250,201	265,268	—5·7	—9·3	373
	Phalia	1,037	..	420	62,901	278,294	217,953	+27·7	—9·0	268
	SHAHPUR DISTRICT ..	4,799	11	981	160,558	719,918	645,001	+11·6	+32·1	150
	Shahpur	610	2	251	33,546	137,899	141,683	—2·7	—6·4	226
	Khushab	2,535	3	171	41,263	168,718	175,824	—4·0	+8·6	67
	Bhalwal	820	4	276	49,171	220,951	184,726	+19·6	+23·3	269
	Sargodha	834	2	283	36,578	192,350	142,768	+34·7	+467·7	231
	JHELUM DISTRICT ..	2,769	4	887	126,935	477,068	511,575	—6·7	+2·0	172
	Jhelum	889	1	431	43,667	173,122	180,034	—3·8	+5·3	195
	Pind Dadan Khan ..	706	1	209	38,514	143,338	156,305	—8·3	—8·1	164
	Chakwal	1,004	2	247	44,754	160,608	175,236	—8·3	+9·3	160
	RAWALPINDI DISTRICT.	2,050	2	1,170	136,879	569,224	547,827	+3·9	—1·9	278
	Rawalpindi	770	1	448	61,921	262,656	249,833	+5·1	—4·3	341
	Gujar Khan	569	..	379	38,520	148,837	148,575	+·2	—1·3	262
	Murree	258	1	104	13,094	60,969	56,570	+7·8	+8·1	236
	Kahuta	453	..	239	23,344	96,762	92,849	+4·2	—2·0	214

Division.	Tahsil.	Area in square miles.	Number of		Number of occupied houses.	Population.		Percentage of variation.		Number of persons per square mile in 1921.
			Towns.	Villages.		1921.	1911.	1911 to 1921.	1901 to 1911.	
1	2	3	4	5	6	7	8	9	10	11
Rawalpindi—*concld.*	ATTOCK DISTRICT ..	4,223	5	616	126,047	512,249	519,273	—1·4	+11·8	121
	Attock	652	3	195	39,970	173,472	161,351	+7·5	+7·2	266
	Pindigheb	1,508	1	134	30,404	120,097	126,300	—4·9	+18·7	80
	Talagang	1,200	1	87	27,931	108,501	115,418	—6·0	+24·6	90
	Fatehjang	863	..	200	27,742	110,179	116,204	—5·2	+1·2	128
	MIANWALI DISTRICT	5,378	4	375	81,095	358,205	341,377	+4·9	+13·1	67
	Mianwali	1,528	1	113	33,659	147,553	138,380	+6·6	+16·2	97
	Bhakkar	3,135	1	203	33,199	147,121	135,127	+8·9	+13·9	47
	Isa Khel	715	2	59	14,237	63,531	67,870	—6·4	+5·7	89
Multan ..	MONTGOMERY DISTRICT.	4,618	3	1,835	146,111	713,786	501,510	+42·3	+12·2	155
	Montgomery	1,558	2	595	45,094	222,675	90,635	+145·7	+35·7	143
	Okara	719	..	347	30,740	148,716	67,144	+121·5	—13·6	207
	Dipalpur	995	..	473	40,691	200,978	197,310	+1·9	+9·2	202
	Pakpattan	1,346	1	420	29,586	141,417	146,421	—3·4	+20·2	105
	LYALLPUR DISTRICT	3,317	3	1,132	178,359	979,463	847,862	+15·5	+43·9	295
	Lyallpur	949	1	322	63,658	344,852	310,916	+10·9	+16·0	363
	Samundri	761	..	287	39,304	224,806	197,796	+13·7	+96·4	295
	Toba Tek Singh ..	899	2	320	42,570	232,426	193,357	+20·2	+55·8	259
	Jaranwala	708	..	203	32,827	177,379	145,793	+21·7	+51·4	251

MULTAN—*concld.*	JHANG DISTRICT ..	3,393	4	980	119,335	570,559	524,803	+8·7	+23·1	168
	Jhang	1,372	1	428	50,353	232,570	216,628	+7·4	+10·2	170
	Chiniot	1,016	1	352	43,033	211,188	183,966	+14·8	+37·4	208
	Shorkot	1,005	2	200	25,949	126,801	124,209	+2·1	+29·6	126
	MULTAN DISTRICT ...	5,767	3	1,647	193,560	890,264	814,213	+9·3	+14·7	154
	Multan	845	1	282	53,411	243,385	260,397	—6·5	+13·0	288
	Shujabad	683	1	146	29,890	132,091	134,418	—1·7	+7·6	193
	Lodhran	1,056	..	261	28,080	125,353	127,776	—1·9	+12·9	119
	Mailsi	1,430	..	335	24,416	113,927	120,549	—5·5	+11·5	80
	Khanewal	892	1	361	27,109	127,131	26,392	+381·7	+54·0	143
	Kabirwala	861	..	262	30,654	148,377	144,681	+2·6	+24·5	172
	MUZAFFARGARH DISTRICT.	5,575	5	850	126,806	568,478	569,461	—·2	+7·9	102
	Muzaffargarh	912	2	376	42,402	178,579	187,064	—4·5	+6·9	196
	Alipur	925	1	173	31,793	146,711	146,135	+·4	+11·9	159
	Sanawan	1,321	..	143	23,603	108,970	107,671	+1·2	+7·6	82
	Leiah	2,417	2	158	29,008	134,218	128,591	+4·4	+5·4	56
	DERA GHAZI KHAN DISTRICT.	5,407	7	712	98,672	469,052	499,860	—6·2	+6·0	87
	Dera Ghazi Khan ..	1,510	1	235	41,491	193,789	182,894	+6·0	—6·0	128
	Sanghar	1,065	1	171	18,826	84,759	106,640	—20·5	+22·4	80
	Rajanpur	2,001	3	165	20,794	105,008	106,911	—1·8	+14·1	52
	Jampur	831	2	141	17,561	85,496	103,415	—17·3	+7·3	103
	BILOCH TRANS-FRONTIER.	2,566	..	8	..	26,758	28,587	—6·4	+18·7	10
	PUNJAB STATES ..	24,052	40	11,103	981,768	4,416,036	4,212,794	+4·8	—4·8	184
	A.—HAVING POLITICAL RELATIONS WITH THE PUNJAB GOVERNMENT.	5,829	4	2,110	90,471	408,019	412,173	—1·0	+·1	70

Division.	Tahsil.	Area in square miles.	Number of		Number of occupied houses.	Population.		Percentage of variation.		Number of persons per Square mile in 1921.
			Towns.	Villages.		1921.	1911.	1911 to 1921.	1901 to 1911.	
1	2	3	4	5	6	7	8	9	10	11
	DUJANA STATE ..	100	1	31	5,207	25,833	25,485	+1·4	+5·4	258
	Dujana	12	1	2	1,110	5,446	5,428	+·3	..	454
	Nahar	88	..	29	4,097	20,387	20,057	+1·6	..	232
	PATAUDI STATE ..	52	1	40	4,017	18,097	19,543	—7·4	—10·9	348
	KALSIA STATE ..	188	2	176	13,330	57,371	55,909	+2·6	—16·8	305
	Chachrauli	..	1	110	7,899	32,126	34,086	+5·8	—14·0	..
	Dera Basi	..	1	59	4,202	17,327	16,713	+3·7	—21·4	..
	Chirak	..	..	7	1,229	7,918	5,110	+55·0	—18·7	..
	SIMLA HILL STATES	*5,489*	..	*1,863*	*67,917*	*306,718*	*311,236*	*—1·5*	*+4·3*	*56*
	BASHAHR STATE ..	3,881	..	86	16,229	90,366	93,203	—3·0	+10·1	23
	Rampur (Bashahr Proper)	735	..	30	5,876	31,369	31,664	—·9	+10·6	43
	Rohru (Bashahr Proper)	622	..	27	6,086	34,951	37,170	—6·0	+8·7	56
	Chini (Bashahr Proper)	2,463	..	14	3,475	19,757	20,123	—1·8	+13·4	8
	Khaneti (Feudatories)	19	..	9	556	2,938	2,854	+2·9	+10·8	155
	Delah (Feudatories)	42	..	6	236	1,351	1,392	—2·9	—6·5	32

NILLAGARH STATE ..	256	..	542	12,104	46,868	49,230	—4·8	—6·3	183
Des	126	..	222	6,971	26,990	28,024	—3·7	..	214
Pahar	130	..	320	5,133	19,878	21,206	—6·3	..	153
KEONTHAL STATE ..	359	..	278	11,569	47,455	46,224	+2·7	+9·3	132
Junga } Keonthal Proper	54	..	126	3,617	13,409	12,939	+3·6	+13·2	248
Fagu } Keonthal Proper	42	..	64	1,694	6,932	6,793	+2·0	+11·3	165
Rawin } Keonthal Proper	20	..	28	1,235	5,259	5,622	—6·5	+13·4	263
Koti } Feudatories	50	..	10	2,088	9,228	8,265	+11·7	+3·8	185
Theog } Feudatories	144	..	11	1,528	6,300	6,345	—·7	+12·2	44
Madahn } Feudatories	9	..	23	881	3,729	3,901	—4·4	+5·3	414
Ghund } Feudatories	28	..	4	406	2,118	1,887	+12·2	—2·1	76
Ratesh } Feudatories	12	..	12	120	481	472	+1·9	+5·1	40
BAGHAL STATE ..	124	..	420	6,376	26,099	26,008	—3·6	+1·1	202
JUBBAL STATE ..	320	..	34	4,815	25,752	24,620	+4·6	+10·7	80
Barar } Jubbal Proper.	32	..	4	680	3,324	3,602	—7·7	..	104
Chopahal } Jubbal Proper.	256	..	17	3,945	21,532	20,025	+7·5	+11·6	84
Rawin } Feudatories	7	..	11	147	711	749	—5·1	—9·0	102
Dhadi } Feudatories	25	..	2	43	185	244	—24·2	—1·2	7
OTHER SIMLA HILL STATES.	549	..	503	16,824	71,178	71,951	—1·1	+1·1	130
Baghat	36	..	21	2,754	9,505	8,797	+8·0	—7·3	264
Kumharsain	90	..	29	2,186	12,227	12,219	+ ·1	+4·1	136
Bhajji	96	..	51	3,649	14,263	14,972	—4·7	+12·5	149
Mahlog	43	..	184	2,130	8,296	8,663	—4·2	—3·4	193
Balsan	51	..	30	1,488	6,137	6,225	—1·4	—7·1	120
Dhami	26	..	107	1,027	4,786	4,484	+6·7	—·5	184
Kuthar	20	..	21	1,080	3,841	4,016	—4·4	—4·3	192
Kunihar	80	..	12	532	1,945	2,208	—11·9	+1·8	24
Mangal	12	..	14	289	1,193	1,267	—5·8	+3·3	99
Bija	4	..	11	242	943	1,064	—11·4	—5·9	236

Division.	Tahsil.	Area in square miles.	Number of		Number of occupied houses.	Population		Percentage of variation.		Number of persons per square mile in 1921.
			Towns.	Villages.		1921.	1911.	1911 to 1921.	1901 to 1911.	
1	2	3	4	5	6	7	8	9	10	11
	OTHER SIMLA HILL STATES—concld.									
	Darkoti	8	..	14	119	610	521	+17·1	+·6	76
	Tharoch	67	..	4	692	4,219	4,493	—6·1	+1·9	63
	Sangri	16	..	5	636	3,213	3,022	+6·3	+8·9	201
	B.—Having Political Relations with the Government of India.	18,223	36	8,993	891,297	4,008,017	3,800,621	+5·5	—5·3	220
	LOHARU STATE ..	222	1	67	4,028	20,621	18,597	+10·9	+22·1	93
	NAHAN STATE ..	1,198	1	1,012	31,161	140,448	138,520	+1·4	+2·1	117
	Nahan	..	1	158	4,153	17,993	17,719	+1·6	—·9	..
	Rinka	..	..	267	11,684	57,605	57,456	+·3	+7·9	..
	Pachad	..	..	399	8,661	33,388	33,722	—1·0	—5·0	..
	Paonta	..	..	188	6,663	31,456	29,623	+6·2	+1·9	..
	BILASPUR STATE ..	451	..	955	22,683	98,000	93,107	+5·3	+2·5	217
	Bilaspur	215	..	409	9,366	40,577	38,011	+6·8	..	189
	Ghumarwari	236	..	546	13,317	57,423	55,096	+4·2	..	243

MANDI STATE ..	1,200	1	165	39,455	185,048	181,110	+2·2	+4·1	154
Mandi Sadr	..	1	38	9,622	45,755	45,241	+1·1	+·3	..
Harabagh	..	..	47	11,108	51,942	51,710	+·4	+2·1	..
Chachiot	..	..	31	7,165	36,259	37,990	—4·6	+8·0	..
Sarkaghat	..	..	49	11,560	51,092	46,169	+10·7	+7·0	..
SUKET STATE ..	420	1	283	11,435	54,328	54,928	—1·1	+·5	129
Bhal (Sadr)	..	1	111	4,517	19,974	19,338	+3·3	—5·5	..
Karsog	..	..	172	6,918	34,354	35,590	—3·5	+4·0	..
KAPURTHALA STATE	661	3	618	65,491	284,275	268,133	+6·0	—14·7	430
Kapurthala	213	1	202	20,337	87,045	51,318	+69·6	..	409
Sultanpur	177	1	182	15,624	71,012	63,706	+12·9	..	406
Phagwara	117	1	87	13,952	59,282	57,163	+3·8	..	507
Bhunga	14	..	23	1,888	7,645	7,544	+1·3	..	546
Bholath	139	..	120	13,294	56,920	45,513	+25·1	..	409
Bastiat	1	..	4	396	1,471	42,889	—96·6	..	1,471
MALER KOTLA STATE	167	1	115	30,096	80,322	71,144	+12·9	—8·2	481
Maler Kotla	..	1	21	12,285	34,457	..	..	..	..
Ahmadgarh	..	..	44	9,628	22,761	..	..	..	..
Fatehgarh	..	..	50	8,183	23,104	..	..	..	..
FARIDKOT STATE ..	638	2	174	31,823	150,661	130,294	+15·6	+4·3	236
						73,464	..	..	..
Faridkot	..	..	..	..	..	56,830	..	..	..
Kot Kapura	..	..	..	..	..				
CHAMBA STATE ..	3,216	1	50	29,386	141,867	135,873	+4·4	+6·3	44

Division.	Tahsil.	Area in square miles.	Number of		Number of occupied houses	Population.		Percentage of variation.		Number of persons per square mile in 1921.
			Towns.	Villages.		1921.	1911.	1911 to 1921.	1901 to 1911.	
1	2	3	4	5	6	7	8	9	10	11
	PATIALA STATE ..	5,932	11	3,607	338,683	1,499,739	1,407,659	+6·5	—11·8	253
	Patiala	459	2	402	35,472	136,511	134,124	+1·8	..	297
	Rajpura	304	..	290	23,730	93,210	90,028	+3·5	..	307
	Sirhind	366	2	355	31,419	126,236	117,508	+7·4	..	345
	Kandaghat	344	..	1,074	14,658	54,705	57,232	—4·4	..	159
	Bhawanigarh	490	1	208	26,073	112,195	102,435	+9·5	..	229
	Sunam	486	1	128	24,947	114,071	104,288	+9·4	..	235
	Dhuri	489	..	263	38,136	161,249	147,630	+9·2	..	330
	Narwana	582	..	138	28,064	135,513	120,531	+12·4	..	233
	Barnala	346	2	79	19,200	85,168	79,035	+7·8	..	246
	Bhatinda	868	1	203	37,042	185,652	166,257	+11·7	..	214
	Mansa	622	..	180	29,094	141,182	134,679	+4·8	..	227
	Narnaul	576	2	287	30,848	154,047	153,912	+·1	..	267
	JIND STATE	1,268	4	437	62,580	308,183	271,728	+13·4	—3·6	243
	Sangrur	242	1	91	13,349	60,961	51,282	+18·9	—20·7	252
	Jind	464	2	163	27,901	136,903	120,668	+13·5	—3·4	295
	Dadri	562	1	183	21,330	110,319	99,778	+10·6	+8·0	196

NABHA STATE	966	6	490	55,164	263,334	248,887	+5·8	—16·5	273
Amloh	161	1	150	10,023	48,200	43,336	+10·0	—29·9	299
Nabha	130	1	80	6,723	39,669	36,212	+9·5	—31·0	305
Phul	131	1	34	7,939	34,358	33,062	+3·9	—11·4	262
Jaitu	82	1	15	3,662	17,967	16,865	+6·5	—14·0	219
Dhanaula	181	1	46	11,311	47,814	44,103	+8·4	—19·1	264
Bawal	281	1	165	15,506	75,326	74,809	+·7	+4·7	268
BAHAWALPUR STATE	1,884	4	1,020	169,312	781,191	780,641	+·1	+8·3	415
Minchinabad	128	..	214	19,032	97,130	130,071	—25·3	+32·1	759
Bahawalnagar	222	..	164	12,244	57,266	..	..	..	258
Khairpur	119	..	177	19,649	88,497	87,826	+·8	+6·6	744
Bahawalpur	64	1	114	22,934	98,247	106,957	—8·1	+8·8	1,535
Ahmadpur Sharqi ..	77	1	101	25,849	116,400	110,994	+4·9	+2·3	1,512
Allahabad	312	..	64	19,413	90,656	87,235	+3·9	+2·3	291
Khanpur	135	1	54	19,013	88,201	92,975	—5·1	+3·9	653
Naushera	284	..	73	17,662	82,659	87,060	—5·1	+7·1	291
Ahmadpur Lamma ..	543	1	62	13,516	62,135	77,523	+19·8	+·6	114
DELHI	593	1	314	114,683	488,188	413,447	+18·1	—2·0	823

Civil and Sessions divisions.

698. The twenty-one sessions divisions are arranged as follows :—

Division.	Districts.	Division.	Districts.
Hissar ..	Hissar. Gurgaon.	Gujranwala ..	Gujranwala. Gujrat.
Karnal ..	Karnal. Rohtak.	Sialkot .. Jhelum ..	Sialkot. Jhelum.
Ambala ..	Ambala. Simla.	Rawalpindi .. Attock .. Mianwali ..	Rawalpindi. Attock. Mianwali.
Hoshiarpur ..	Hoshiarpur. Kangra (without Kulu).	Shahpur ..	Shahpur. Jhang (Civil cases)
		Lyallpur ..	Lyallpur. Jhang (Sessions cases). Sheikhupura.
Jullundur ..	Jullundur ..		
Ludhiana ..	Ludhiana.		
Ferozepore ..	Ferozepore ..	Multan ..	Multan. Muzaffargarh.
Lahore ..	Lahore.	Dera Ghazi Khan.	Dera Ghazi Khan.
Amritsar ..	Amritsar.	Montgomery ..	Montgomery.
Gurdaspur ..	Gurdaspur.		

The sub-division of Kulu forms a separate civil division, the Deputy Commissioner of Kangra being the District Judge. Sessions cases from the Kulu sub-division, however, are tried by the Sessions Judge of Hoshiarpur.

Sub-divisions and Sub-*tahsils*.

699. Sub-divisions (*para.* 68) have been constituted at Sirsa (Hissar), Sonepat (Rohtak), Palwal (Gurgaon), Kaithal (Karnal), Rupar (Ambala), Kulu (Kangra), Fazilka and Moga (Ferozepore), Kasur (Lahore), Khushab (Shahpur), Pind Dadan Khan (Jhelum), Pindigheb (Attock), Bhakkar (Mianwali), Pakpattan (Montgomery), Khanewal (Multan), Leiah and Alipur (Muzaffargarh), and Rajanpur (Dera Ghazi Khan). Special sub-divisional officers are deputed in the summer months for the charge of the hill stations of Dalhousie (Gurdaspur), and Murree (Rawalpindi). Sub-*tahsils* in charge of *Naib-Tahsildars* (who are subordinate to the *Tahsildar* of the *tahsil*) exist at Tohana and Dabwali (Hissar), Kalka (Ambala), Simla and Kot Khai (Simla), Nathana and Abohar (Ferozepore), Bhera (Shahpur) and Kalabagh (Mianwali).

APPENDIX I.

LIEUTENANT-GOVERNORS OF THE PUNJAB.

Name.	Assumed charge of office.	Remarks.
Sir John Lawrence, Bart., G.C.B.	1st January 1859 ...	(Aft. by creation Baron Lawrence, G.C.S I.).
Sir Robert Montgomery, K.C.B.	25th February 1859	(Aft. G.C.S.I.). Officiating. Confirmed 1st May, 1859.
Donald Friell McLeod, C.B. ...	10th January 1865...	(Aft K.C.S.I.).
Major-General Sir Henry Durand, K.C.S.I., C.B.	1st June 1870 ...	Died at Tonk, in the Dera Ismail Khan District, 1st January 1871.
R. H. Davies, C.S.I. ...	20th January 1871...	(Aft K.C.S.I., C.I.E.).
R. E. Egerton, C.S.I. ...	2nd April 1877 ...	(After K.C.S.I., C.I.E.).
Sir Charles U. Aitchison, K.C.S.I., C.I.E.	3rd April 1882.	
James Broadwood Lyall ...	2nd April 1887 ...	(Aft G.C.I.E., K.C.S.I.).
Sir Dennis Fitzpatrick, K.C.S.I.	5th March 1892.	
William Mackworth Young, K.C.S.I.	6th March 1897.	
Sir C. M. Rivaz, K.C.S.I. ...	6th March 1902.	
Sir D. C. J. Ibbetson, K.C.S.I.,	6th March 1907 ...	And Officiating 27th April to 19th October 1905. Resigned 22nd January 1908.
T. G. Walker, C.S.I., ...	22nd May 1907 ...	(Aft. K.C.I.E., C.S.I.,) Officiating to 12th August 1907, and from 22nd January 1908.
Sir Louis W. Dane, K.C.I.E., C.S.I.	25th May 1908 ...	(After G.C.I.E.).
James McCrone Douie, C.S.I.	28th April 1911 ...	(Aft. K.C.S.I.) Officiating to 4th August 1911.
Sir M. F. O'Dwyer, G.C.I.E., K.C.S.I.	26th May 1913.	
Sir E. D. Maclagan, K.C.S.I., K.C.I.E.	26th May 1919.	

GOVERNOR OF THE PUNJAB.

Name.	Assumed charge of office.	Remarks.
Sir E. D. Maclagan, K.C.S.I., K.C.I.E.	3rd January 1921.	

APPENDIX II.

BISHOPS OF THE DIOCESE OF LAHORE.

T. V. French, D.D.	...	December 1877.
Henry James Matthew, D.D.	...	6th January 1888.
George Alfred Lefroy, D.D.	...	1st November 1899.
H. B. Durrant, D.D.	...	6th August 1913.

APPENDIX III.

Sources.

Publications of Punjab Government. (*)

Government of India Publications. (†)

Other Publications. (‡)

General.

* Punjab Administration Reports, 1911-12, and subsequent years.

* Douie : Land Administration Manual.

* Financial Commissioner's Standing Orders.

† Agricultural Statistics of India.

† Statistics of British India, volumes I to IV.

† Imperial Gazetteer of India (Provincial Series), Punjab.

† Ibbetson : Census of the Punjab, 1881.

† Report on Indian Constitutional Reforms.

† Rushbrook Williams : India in 1919.

† Rushbrook Williams : India in 1920.

† Rushbrook Williams, India in 1921-22.

† Report of the census of the Punjab and Delhi, 1921.

‡ Calvert : Wealth and Welfare of the Punjab (*Civil and Military Gazette*, Lahore).

‡ Roberts and Faulkner : Text-book of Punjab Agriculture (*Civil and Military Gazette*, Lahore).

‡ Douie : The Punjab, North-West Frontier Province and Kashmír (Cambridge University Press).

‡ V. Smith : Oxford History of India (Clarendon Press).

‡ Baden Powell : Land Systems of British India (Clarendon Press).

‡ The Indian Year Book, 1922 (*Times* Press, Bombay).

‡ Candler : Then and Now : A Retrospect.

‡ V. Smith : Early History of India (Clarendon Press).

CHAPTER II.—Historical.

* Leigh : The Punjab and the War.

CHAPTER III.—Form of Administration : The Executive.

* Police Administration Reports from 1912 onwards.

CHAPTER X.—Land Administration.

* Douie : Settlement Manual.

CHAPTER XI.—Public Works Department.

* Dorman : High Ways in the Punjab : Past and Future.

CHAPTER XII.—Irrigation.

† Triennial Review of Irrigation in India, 1918—1921.

CHAPTER XIII.—Education.

* Progress of Education during the Quinquennium ending 1916-17.

*Progress of Education during the Quinquennium ending 1921-22.

CHAPTER XIV.—Archæology.

*Annual Progress Report : Superintendent, Archæological Survey.

*Annual Progress Report : Hindu and Buddhist monuments, Northern Circle, for the year ending 31st March 1921.

† Archæological Survey of India Reports for the years 1872-73, by General Cunningham, Volume V.

CHAPTER XV.—Agriculture.

* Season and Crop Reports, 1920-21, 1921-22.

† Estimates of Area and Yield of Principal Crops in India, 1920-21.

‡ Calvert : Law and Principles of Co-operation (Thacker, Spink & Co.).

* Darling : Some Aspects of Co-operation in Germany, Italy and Ireland.

CHAPTER XVI.—Forests.

‡ E. P. Stebbing : The Forests of India (The Bodley Head)

* Mustoe and Casson : Notes on Roadside Arboriculture.

CHAPTER XVIII.—Tribes and Languages.

* Ibbetson : Punjab Castes.

APPENDIX IV

Glossary of vernacular and other Terms.

(Figures in brackets refer to paragraphs of the Report.)

Pronunciation of vowels in vernacular words (which are in italics).

a as *u* in must	ú as *oo* in Pool.
á as *a* in mast.	e as French ê in tête.
i as *i* in pit.	o as *o* in roll.
í as *ea* in peat.	*ai* as eye.
u as *u* in pull.	au as *ow* in cow.

Adná málik .. Inferior proprietor (221).

Ala málik .. Superior owner over a village (221).

'Arhtí .. Commission agent in a *mandí* (497).

Bájrá .. Spiked millet (507).

Bania .. Village shopkeeper, money-lender.

Bár .. Upland between two river valleys.

Bára .. Inferior (lands).

Báráni .. Unirrigated (land), dependent on rainfall.

Batái .. Rent taken by division of produce.

Bázár .. A street lined with shops.

Bháa chárá .. (1) Originally applied to a special form of joint village co-sharing in which the land was allotted by a peculiar 'customary' method, designed to secure equality; (2) subsequently extended (and in its modern official use) to mean any form of constitution other than that of the ancestral share villages (218).

Bhang .. Dried leaves of the hemp plant (*cannabis sativa*), a narcotic (135).

Bigha .. A measure of area (derived from the Moghul Empire). In the Western Punjab the *bigha* is half a *ghamáo*, in the east the Shahjahání *bigha* is five-eighths of an acre and the *zamíndári*, or *kacha bigha*, five-twenty fourths of an acre. The actual *bigha* used by *zamíndárs* does not always correspond with the *kacha bigha* used in Settlement Surveys (252).

Bhúsa .. Chaff used for fodder (496).

Biswa .. One-twentieth of a *bigha* (*q. v*) (252).

Biswánsi .. One-twentieth of a *biswa* (*q. v.*) (252).

Chádar .. A sheet worn as a shawl by men and sometimes by women.

Chakdár .. A tenant settler (inferior owner) in the South-west Punjab (209).

Chamár .. A caste whose trade is to tan leather.

Channa .. Gram (*cicer arietinum*), a leguminous crop.

Chapátí .. A cake of unleavened bread.

Chaprási .. An orderly or messenger.

Charas .. The resin of the hemp plant (*cannabis sativa*) used for smoking (135).

Chárí .. *Jowár* (*q. v.*) Used for fodder (507).

Chaudhrí .. (In ancient times) a subordinate Revenue official, sometimes having considerable influence; (in Moghal times) the executive officer of a (*pergana*) (*q. v.*); (now) (*a*) the headman of a guild or trade; (*b*) a courtesy title given to members of some agricultural tribes, especially *Jats*.

Chaukídár .. (*a*) Village watchman (83, 84); guard over property.

Chela .. A pupil (usually in connection with religious teaching).

Chief Commissioner The administrative head of one of the lesser provinces in British India (28).

Chirágáh .. Grazing ground (239).

Chogha .. Dressing gown (585).

Civil Surgeon .. The officer in medical charge of a district (192).

Cognizable .. An offence for which the culprit can be arrested by the Police without a warrant.

Commissioner .. (*a*) The officer in charge of a Division or group of districts (263); (*b*) the head of various departments such as Salt, Income-tax, etc.

Court of Wards .. An establishment for maintaining estates of minor and other disqualified persons (272).

Crore (*karor*) .. Ten million.

Daffadár .. A non-commissioned Indian officer in the Army or the Police.

Dacoity .. Robbery by five or more persons.

Darbár .. (*a*) A ceremonial assembly, especially one presided over by the ruler of a State, hence (*b*) the government of a tributary State.

Darí (durrie) .. Cotton rug (585).

Dárogháh .. Title of officials in various departments, now especially applied to subordinate controlling officers in the Police and Jail Departments.

Deputy Commissioner		The administrative head of a district in non-regulation provinces, corresponding to a collector in Regulation provinces.
Desí	..	Native of the country, particularly applied to native as opposed to American cotton.
Dharamsálá	..	A charitable institution provided as a resting place for Hindu pilgrims or travellers.
District	..	The most important administrative unit of area (corresponding to an English County) (67).i
Division	..	(*a*) A group of districts for administrative and revenue purposes under a Commissioner; (*b*) the area in charge of a Deputy Conservator of Forests usually corresponding with a (revenue) district; (*c*) the area under a Superintendent of Post Offices; (*d*) a group of revenue districts under an Executive Engineer of the Public Works Department.
Doáb	..	Country lying between two rivers.
Faqír	..	Muhammadan religious mendicant.
Gathá	..	99 inches (252).
Ghí	..	Clarified butter.
Financial Commissioner.		The chief controlling Revenue authority in the Punjab (262).
Ghumáo	..	A measure of area of varying size in some places equal to an acre (252).
Girdáwar	..	*Kánúngo* or supervisor of *patwáris* (270).
Girdáwarí	..	Harvest inspection by *patwáris* (269).
Got	..	Sub-division of a tribe.
Gram	..	A *rabi* pulse (*cicer arietinum*) (508).
Guárá	..	A *kharíf* pulse (*cyamopsis psoralioides*) (507).
Gur	..	Crude sugar (511).
Gurmukhí	..	The Punjabi Script; used especially by the Sikhs as their religious books are written in it.
Guru	..	Spiritual father or guide.
Haisiyat tax	..	Profession tax (161).
Haj	..	Pilgrimage to Mecca.
Hájí	..	A Muhammadan who has performed the *haj*.
Hak kasúr	..	A fixed proportion of the produce received by a *chakdár* (209).
Hakím	..	An Indian doctor practising the Unani system (derived from the ancient Greek physicians);
Hal	..	The primitive Indian plough (483).

Hartál	..	Shutting up of all shops in a market or *bázár* (on account of oppression or on the death of a ruler or his relative).
Hijra,	..	The Muhammadan era dating from the flight of Muhammad to Mecca, 6th June (662 A. D.)
Ijradár	..	Sikh revenue farmer (247).
Imám	..	Muhammadan who leads prayers in a mosque (278).
Inám	..	A cash reward for services paid to a man of influence.
Inundation Canal		A channel taken off from a river at a comparatively high level, which conveys water only when the river is in flood.
Jágír	..	An assignment of land revenue.
Jágírdár	..	Holder of an assignment of land revenue.
Jamabandí	..	Register of holdings of owners and tenants, showing land held by each and amounts payable as rent, land revenue, and cesses (254).
Jama Masjid	..	The principal mosque in a town, where Muhammadan worshippers collect on Fridays.
Jand	..	A tree nearly related to the Acacia (*prosopis spicigera*) (562).
Jangal (jungle)	..	Uncultivated land covered with brushwood and small trees.
Jáo	..	Barley (500).
Jhalár	..	A small Persian wheel apparatus erected on canal cuts, creeks, &c. to raise the water.
Jirga	..	A council of tribal elders on the Frontier (101).
Jowár	..	Great millet (*andropogon sorghum*) (507).
Kachhá	..	Raw or unripe; applied to measure of area or weight as opposed to the standard (*pakka*) weight; applied also to buildings, wells, which are *kachha* if made of mud bricks, and *pakka* if made of burnt bricks.
Kadam	..	A pace; the common lineal unit in land measuring (252).
Kalar	..	Barren land; also applied to saline or alkaline efflorescences (*reh*) on the surface of the soil (582).
Kankar	..	Nodular limestone, used for metalling roads, as building stones, or for preparation of lime (582).
Kánsí	..	Bell-metal (586).
Kánúngo	..	Supervisor of *patwáris* (270).

Kárdár .. The local governor or head of a district under the Sikhs (247).

Kasúr .. Small dues (209).

Kasúrkhwár .. Person entitled to small dues (209).

Kathá .. A thin fibrous sugarcane (512).

Khaddar .. A coarse strong hand-spun cotton cloth with a single warp and weft (585).

Khálsa .. (Lit.) Pure ; applied (*a*) especially to themselves by the Sikhs, the word *Khálsa* being equivalent to the Sikh community ; (*b*) land revenue retained by Government as opposed to that made over to grantees (*e.g., jágírdárs, muáfídárs*).

Khúlis .. Simple (as opposed to joint) *zamíndárí* villages.

Kharíf .. The autumn harvest (482).

Khasra .. List of fields, field register.

Khasra Girdáwarí Harvest inspection register.

Khes .. A kind of figured cloth ; diaper, damask (585).

Kíkar .. A thorny acacia tree (*acacia arabica*) (562).

Killabandi .. A method of dividing land into squares or rectangles (253).

Kos .. A variable measure in the Punjab, about 1¼ miles.

Kos minár .. The milestones of the Mughal Empire (about two miles apart).

Lákh .. 1,00,000.

Lambardár .. Headman of a village, or of a *patti* or section of a village (157).

Lingam .. The phallic emblem, worshipped as the representative of Shiva (466).

Lungí .. Turbans of cotton with silk borders (585).

Malba .. Fund out of which common village expenses are defrayed (157).

Málik .. Owner.

Málikána .. Fee paid in recognition of proprietary title (231).

Mandí .. Organised grain market (497).

Masjid .. A mosque, Muhammadan place of worship.

Maulví .. A person learned in Muhammadan law.

Misl .. A "case," file of papers relating to a law-suit or official proceedings ; (*b*) a company or group of Sikh confederate clans (13).

Muáfídár .. The holder of an assignment of land revenue.

Muazzin .. The man who calls out the *ázán* or Muhammadan call to prayers from the minarets of a mosque (278).

Munshí .. An Indian clerk.

Mushtarka .. Joint (used of *zamíndárí* villages) (216).

Nahrí .. Land irrigated from a canal.

Náib .. Assistant or Deputy (266).

Namda .. Coloured felt (585).

Nawáb .. The deputy or local governor of a great province under the Moghal Empire; now an honorary title amongst Muhammadans.

Nazrána .. A due paid on successions or on certain ceremonial occasions.

Názim .. A district officer under native rule; properly the magistrate or criminal officer, as opposed to the *Díwán* who had the *díwání* or civil and revenue administration (247).

Nazúl .. Property escheated or lapsed to the State; commonly applied to any land or house property acquired by Government either by means of escheat or as having belonged to a former Government.

Non-regulation .. A term formerly applied to certain Provinces to show that the regulations of the full code of legislation was not in force in them (69).

Nullah (Nálá) .. A ravine; watercourse or drain.

Pakka .. (Ripe, perfect) of standard weights opposed to the local *kachha* or rough weights; also of masonry finished with mortar; wells lined with masonry, etc.

Pancháyat .. (Council of five), Council of Elders, heads of families, formerly the managing body in any landlord (joint) village; now applied to any body of arbitrators (158).

Pargana .. An administrative division of territory under the Moghal Empire, and thenceforward, being a sub-division of a district and containing a varying number of villages.

Pashm .. The fine wool of the Tibetan goat (585).

Pashmína .. Woven from *pashm* (585).

Pattí .. A sub-division of an estate (village); a well holding.

Pattídárí .. A form of joint or landlord village in which the land is divided out on shares purely ancestral, or that were once such (217).

Pattú .. Coarse woollen cloth made in the hills (585).

Patwárí .. Village accountant or registrar (269).

Phulkárí .. An embroidered sheet (*lit.* flower work) (448, 585).

Pípal .. A sacred tree (*ficus religiosa*).

Pleader .. A class of legal practitioners.

Ponda .. A thick green sugarcane (512).

Rabí .. Spring harvest (481).

Raiyat .. Tenant.

Rakh .. A tract of uncultivated land bearing grass or fuel-jungle ; reserved or Government waste not allotted to villages at Settlement.

Reh .. Saline or alkaline efflorescences on the surface of the soil.

Riwáj-i-ám .. Record of customs followed by the chief tribes in a district in the matter of marriage, inheritance, &c.

Sadar .. Head-quarters station.

Sadr kánúngo .. District *kánúngo* (271).

Sailába .. Flooded soil, or soil moistened by river percolation.

Sarson .. Rape (*brassica campestris, var. glauca*) (509).

Senji .. Indian clover (*melliotus parviflora*) (514).

Ser .. A weight composed of 80 *tolás* of 180 grains each (2·057 lbs).

Shástras .. The religious law-books of the Hindus (140).

Shísham .. A valuable timber tree of the Leguminosæ order (*dalbergia sissu*) 563).

Silhadár .. A class of inferior owner in South-west Punjab (209).

Siris .. A tree of the order Leguminosæ (*albizzia lebek*) (563).

Sohágá .. A wooden clod-crusher (483).

Súbah .. A large province under the Moghal Empire (7).

Súsi .. A smooth cloth with coloured stripes used for women's trousers (585).

Stúpa (or tope) .. A Buddhist tumulus, usually of brick or stone, and more or less hemispherical, containing relics (464).

Superintendent (*a*) The chief police officer in a district ; (*b*) the official, usually of the Indian Medical Service, in charge of a Central Jail (110).

Tahsíl .. A sub-division of a district, in charge of a *Tahsíldár* (266).

Tahsíldár .. Official in chief executive charge of a *tahsíl* (264).

Takávi .. An advance or loan made to agriculturists to make improvements, buy cattle, seed, &c., regulated by law (Act XII of 1884, XIX of 1883).

Taluqa .. Applied in the old days to signify the area under a local chief; sometimes the same as *pargana*.

Tárámírá .. An oil-seed (*eruca sativa*) (509).

Taraddadgár .. A tenant privileged as having made improvement (*taraddad*) (209).

Thagí (thuggee).. Robbery after strangulation of victim (28).

Thána .. A police station, and hence the circle attached to it.

Thal .. The sandy waste in the Sind Ságar Doab.

Toria .. An oil-seed (*brassica campestris*) (509).

Wájib-ul-arz .. A statement of village customs, rules of management, etc., prepared at Settlement.

Záid kharíf .. A late autumn crop (509).

Zail .. (*a*) a group of estates out of which some representative man is appointed *zaildár*; (*b*) an administrative area under the Army Remount Department (557).

Zaildár .. A man of influence appointed to have charge of a *zail* (264).

Zamíndár .. A land-owner.

Zamíndárí .. (*a*) A form of village tenure (216); (*b*) a type of school for agriculturists (429).

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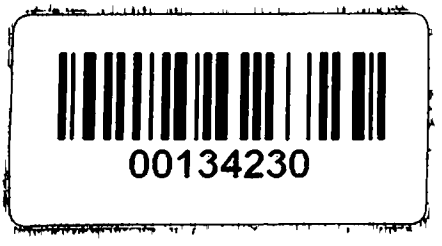
Zamzamah Gun	479
Zamindari Schools	429
Zenana Missionary Society	675

LIBRARY OF THE BOMBAY BRANCH OF THE ROYAL ASIATIC SOCIETY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